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# Canadian Public Health Journal

Devoted to the Practice of  
**PREVENTIVE MEDICINE**

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ANNUAL MEETING

AMERICAN PUBLIC HEALTH ASSOCIATION

MONTREAL, P.Q.

SEPTEMBER 16th to 17th, 1931

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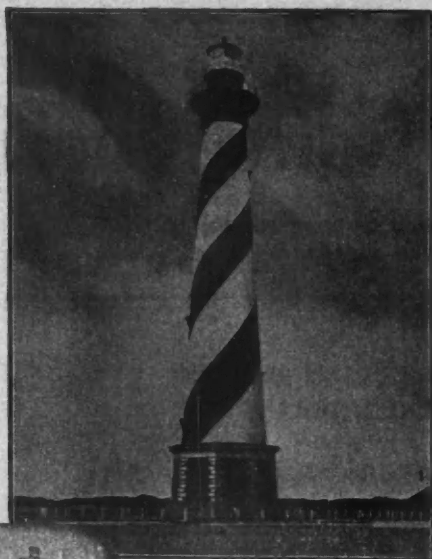
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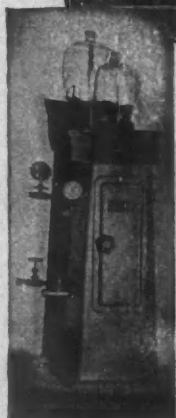
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## Presidential Address\*

F. C. MIDDLETON, M.D., D.P.H.

*Deputy Minister of Health, Saskatchewan*

AT this, the twentieth annual meeting of The Canadian Public Health Association, we are in reality celebrating the twenty-first year of its existence as it was incorporated in April, 1910, under a Dominion Charter. I therefore feel it a double honour, in that you were good enough to elect me to the highest office in the gift of the Association in this, the "coming of age" year of our organization, and I wish to tender to you my most sincere appreciation. No distinction could be a source of greater gratification than to be elected President of this Dominion organization of Public Health representatives.

The first Annual Congress of The Canadian Public Health Association was held in Montreal in December, 1911, under the Presidency of Dr. T. A. Starkey, Professor of Hygiene, McGill University. The Secretary was Major Lorne Drum, M.D., Army Medical Corps, Ottawa, and the Treasurer was Dr. G. D. Porter of Toronto, whose untiring efforts in the interest of the Association have been constantly and freely given. That the Association got off to a good start is evidenced by the calibre of men on the Executive Council, many of whose names have become bywords in Public Health not only in Canada, but also in the Americas, Europe and the British Empire. I refer to such men as Dr. P. H. Bryce, Ottawa; Dr. J. W. S. McCullough, Toronto; Dr. E. P. LaChapelle, Montreal; Dr. C. A. Hodgetts, Ottawa; Dr. R. W. Simpson, Winnipeg; Mr. E. M. Wood, Winnipeg; and to others who have passed to the great beyond:—Dr. F. Montizambert, Ottawa; Mr. T. Aird Murray, C.E., Toronto (formerly Consulting Sanitary Engineer to the Saskatchewan Bureau of Health); Dr. M. M. Seymour, Regina, and the most recent, Dr. Chas. J. O. Hastings, Toronto.

Since the first annual meeting in 1911, on only one occasion did the Association fail to convene and that was in 1914 owing to the outbreak of the war, when the meeting was to have been in Fort William and Port Arthur. The second annual congress met in Toronto under the

\*Presented at the 21st Annual Meeting of the Canadian Public Health Association, Regina, June 17th, 1931.

Presidency of Dr. Chas. Hodgetts, and the third or 1913 convention was brought to Regina with Dr. J. W. S. McCullough as President. Until now Saskatchewan, I believe, has not been favoured with a meeting since that time.

According to the constitution and by-laws of the Association its objects shall be: "the development and diffusion of the knowledge of sanitation in all its branches and all other matters and things appertaining thereto or connected therewith." Other purposes "connected therewith" are:

1. To foster and encourage the practice of preventive medicine.
2. To aid medical officers of health, physicians, public health nurses and other persons engaged in public health work in the acquisition of knowledge of the advancing science and art of preventive medicine, and through them to disseminate this newer knowledge to the public.
3. To consider, promote and support health legislation.

The constitution of the Association is sufficiently elastic to include in its scope new branches or "sections" as conditions demand and warrant.

It is estimated that 90 per cent of the health officers of Canada are members of the Association, and are receiving the official publication "The Canadian Public Health Journal", which is also the official journal of all the Provincial Associations of Medical Officers of Health in Canada. The Editorial Board has made the journal one of the most outstanding public health publications issued, and its circulation is the second largest of any medical publication in Canada. The articles presented are scientific, practical and very much abreast of the times, and its worth is recognized throughout the whole continent for its educational value.

I have in my office a copy of the first or 1911 Canadian Public Health Association programme, and from it one can gather a good deal of information as to what the public health problems were twenty years ago, as naturally the subjects dealt with and discussed would relate to the most outstanding difficulties at that time. Four papers were presented on food inspection; four on town planning; three on housing; two on military aspects of sanitation; one on playgrounds; and one on medical inspection of immigrants. Eight papers dealt with sewage disposal problems; six with water supplies; three with infant mortality; three with tuberculosis; and one with milk. The last five topics named may be considered as hardy perennials, and although much has been accomplished in dealing with these, they still appear regularly in one form or another on most health programmes. A glance at the programme before us today quickly reveals the fact that public health is becoming more and more comprehensive.

The Vital Statistics Section was formed last year, and already has shown that it will be a real contribution to the Association as vital

statistics really constitute the balance wheel of public health, and form the basis on which the need for any special types of public health work is indicated. The Public Health Nursing Section was added seven years ago. This section is always well attended, prepares good papers, arouses keen discussion, and is right up-and-coming with the very latest in that particular branch. The Mental Hygiene Section was formed several years ago, but unfortunately has failed to convene at the past few conferences. However, this year special efforts have been made to revive this section, in view of the increased stimulus and attention being given this field by public health departments. Mental hygienists rightly claim that a great deal of the mental illness found in our institutions could be prevented if properly dealt with at the right time, hence it comes within the scope of preventive medicine. Further, many of the readmissions of paroled patients can be avoided by attaching to the mental hygiene service trained social workers to report on home conditions of the patient—a further preventive measure.

A year ago application was made and approval given at the Toronto meeting for the formation of the Public Health Engineering Section. We most heartily welcome the members of this newly organized section to the family fold, realizing that the work of the engineer forms one of the front line barriers in the prevention of disease.

No public health programme has ever been prepared in which the Laboratory Section did not command the premier place. Were it not for the work accomplished through the use of the test-tube and microscope, public health would still belong to the Dark Ages.

The joint meeting with the Saskatchewan Health Officials' Association cannot help but be a stimulus, one to the other, and we are very pleased to have been able to make such arrangements.

Canada is becoming a Mecca for medical and public health conventions. In September of this year the American Public Health Association convenes for its 60th annual meeting in Montreal. Last year the British Medical Association honoured our Dominion by holding its 98th annual convention in Winnipeg, where the outstanding men in the British Empire in both curative and preventive medicine attended and contributed to the programme. Furthermore, public health was given the greatest recognition ever accorded it when the British Medical Association, which has a membership of over 35,000, elected for its 1931 President, William George Willoughby, M.D., D.P.H., the Medical Officer of Health for the borough of Eastbourne. It is the first occasion on which a public health officer has occupied the chair of the President of the British Medical Association. This is concrete evidence of the co-operation of therapeutic and preventive medicine, and is indicative of the trend of the two types of practice. The practice of medicine is more and more becoming anticipatory, hence preventive.

The obstetrician realizes that although the maternal state is

supposed to be a normal condition, the only way maternal mortality can be reduced is by giving pre-natal care to prevent dangers which may threaten the mother and child. The pædiatrician knows that if the physiological conditions of the infant's life are given more care much of the pathological is avoided. The family physician advocates general periodic medical supervision for the adult, especially after middle life, in order to forestall degenerative diseases as heart disease and nephritis, and to enable him to detect in the curable stage the ever lurking cancer.

Preventive medicine on the other hand, where treatment is a necessary end to prevention, must of necessity reach out into the curative field. This applies particularly to such diseases as tuberculosis and venereal disease. Medicine and public health might each be likened to an amoeba reaching out here and there, and in many instances, merging. A merging with the proper understanding cannot but result in lessening disease.

In remedial medicine and public health, men are constantly making new discoveries and observations, collecting information and data, comparing facts, and working toward established conclusions. There is no such thing as "marking time" in this work. Even though many diseases have been eradicated and others circumscribed, with the average span of life steadily increasing there is still a tremendous economic loss due to illness and death, much of which is preventable.

If much of the sickness and mortality can be prevented, why are we not able to accomplish more than we are doing? It is because the achievements of science in the fields of medicine and public health have made only slight impression on the public, although the public look to medical men and public health workers as the custodians of their health.

It is not knowledge concerning the cause, prevention and treatment of disease that we need, but rather the opportunity to put into effect the knowledge we have. The public must no longer be thought of as merely the beneficiaries of any public health movement; they are the actual participants. When the complete facilities for protecting the health of the people are not taken advantage of, this might be likened to the preparation of a huge banquet with only a few coming to partake of it.

Improvement in mortality and morbidity from any preventable causes may be expected promptly if mass or community effort can be and is applied to the task of control, but so far there is little evidence that satisfactory progress can be made against diseases where individual initiative must be depended on for results. In other words the work of a health department is largely limited to mass or community protection, and for results over and above this, the individual has a serious responsibility. It is discouraging to find that the individual is not assuming this personal responsibility. This observation is amply

demonstrated if we compare the fall in the death rate from certain diseases and the rise in the death rate from others. Take as examples tuberculosis and cancer. Mass psychology and mass effort apply to the tuberculosis problem. Mass psychology is appealed to, through the raising of funds with which to combat the disease, and mass effort is expressed in the erection of sanatoria for the care of tuberculous patients. The prevention of the disease involves habits and practices which apply universally. Fresh air, sunshine, plenty of sleep, and good diet are factors in the prevention of tuberculosis, that may apply to every individual. Cancer on the other hand, is something entirely individual and discovery of its presence depends upon individual initiative. Treatment is more specialized and varies according to the type and location of the malignant condition. Further, early diagnosis followed by proper treatment is the only recommendation for controlling this disease. Statistics indicate a favourable decline in the death rate from tuberculosis, while that from cancer is rapidly on the increase. Another example—infant mortality and heart disease. Infant mortality is gradually being lowered, largely for the reason that infant hygiene has an appeal to mass psychology and especially to all mothers. The sanitary control of milk which is an important factor influencing the infant death rate is subject to mass or community effort. Heart disease on the contrary as a cause of death is constantly on the increase. The condition could be controlled and prevented in many instances but the control depends upon individual initiative, which will result in such practices as periodic medical examinations. Early discovery gives opportunity for such treatment as will postpone serious cardiac trouble.

The reduction in typhoid fever is the result of mass effort expressed through official sanitary supervision over water and milk supplies and sewage disposal.

Many examples could be given to indicate that those diseases which are subject to control and prevention through the application of mass or community effort have declined very satisfactorily, whereas the death rate from those diseases the control and prevention of which depend upon individual initiative has constantly increased.

These observations forcibly bring to our attention:

*First*—That an unceasing educational campaign is indicated to induce people to think in terms of their own well-being.

*Second*—That the application in a general way of all the advances of medical science must be made as easily available to the individual as possible.

A joint committee of the National Educational Association and the American Medical Association has recently enumerated the aims of health education as follows:

"To instruct children and youth so that they may conserve and improve their own health.

"To establish in them the habits and principles of living that, throughout their school life and in later years, will assure the abundant vigour and vitality that provide the basis for the greatest possible happiness and service in personal, family and community life.

"To influence parents and other adults through the health education programme for children, to better habits and attitudes, so that the school may become an effective agency for the promotion of the social aspects of health education in the family and community as well as in the school itself.

"To improve the individual and community life of the future: to insure a better second generation, and still better third generation, a healthier and a more fit nation and race."

The positive features of health must be instilled into the minds and life of the children. At the present time the Department of Education of the Province of Saskatchewan is revising the course of studies for its public schools, and I am sure you will be interested in knowing what the Commissioner of Education has outlined as the three objectives of the new system of elementary school education. They are:

1. Health and happiness.
2. Social efficiency.
3. Recreation—Employment of leisure hours for the enrichment of life.

The underlying principle in the construction of the proposed curriculum is that it shall deal with the life needs of the children and the one mentioned of prime importance is "Health".

In addressing the Health Section of the Ontario Educational Association recently at Toronto, Dr. Huff, Commissioner of Education for Saskatchewan summed up existing health requirements very concisely when he said, "What society needs today is a health conscience, realizing that the great mass of people continue to defy the laws of health, to expose their children and school pupils unwittingly to the most obvious enemies of physical and mental welfare, to contract avoidable diseases, suffer needless pain and function generally far below the capacity of their native intelligence because of physical and mental disorders." He further stated, "Public opinion still interprets the function of the school in terms of information and academic skill, whereas health and happiness should be considered the basic objectives of any system of education."

Such a curriculum will surely assist in the realization of results for which public health officials have for years yearned; and just as the progress in Public Health which has been made in Canada during the past twenty-one years (and real progress has been made) has been largely dependent on the foundations laid by the organizers and later the supporters of this Association, so the Canada of 1950 will largely depend on the principles we adopt and carry out with respect to the



protection of the health of the children of today. This has been most earnestly recognized in the United States when, as a result of President Hoover's recent White House Conference on Child Health and Protection, to which 1,200 experts contributed the best they had, a most comprehensive "Children's Charter" was drawn up. If the nineteen aims contained in the "Charter," and to which the Conference pledged itself, are carried out, the future welfare of every American child is assured. Canada could well endorse a similar charter.

What health conditions have we to report since our 1930 Annual Meeting and what is the trend of Public Health at present? Unfortunately complete official statistics are not yet available, but no serious epidemics were reported. The past year has been a more difficult one economically than usual, and we would almost be prepared to find such conditions reflect unfavourably on the death rate, as unemployment is not conducive to a low mortality rate.

If the mortality statistics as issued by the Metropolitan Life Insurance Company for the year 1930 in connection with their million and a quarter Canadian industrial policyholders are a guide as to general health conditions, we will have every reason to be grateful, as the records of this company indicate that the people of Canada and the United States have enjoyed better health than ever before. Practically every disease, in so far as their policyholders were concerned, showed a decline during the year and certain ones registered a new minimum for all time. Of the diseases showing an increased death rate, cancer, the degenerative diseases and diabetes were the most important. It is encouraging, however, that throughout the whole of Canada cancer is now being recognized as a condition, the prevention, control and treatment of which can only be satisfactorily dealt with if the financial support of the government is given. It has been definitely accepted as a problem for the state and very shortly every public health department will have established a Division of Cancer Control. Another encouraging feature is that the various provinces are co-ordinating their efforts against this disease almost simultaneously, and the private practitioners are offering splendid support.

Education should teach those of middle life the advantages of periodic medical examination to avoid the degenerative diseases and a better knowledge of food requirements should assist the diabetic.

When we look at the record of the East End Maternity Hospital, London, as published in the proceedings of the Royal Society of Medicine, and compare their maternal mortality with ours we blush for shame. This hospital was established forty-five years ago and up to the end of 1929 had cared for 51,487 delivery cases with a fatality rate of 1.35 per 1000 for the whole period and of 0.08 per 1000 for the past eight years. The report stated that the essence of the East End practice is—"not wait and see but see and wait." With an improved maternal mortality rate, a lower infant mortality would almost naturally

follow, as, if the mother is being adequately cared for during the pre-natal period, at confinement and also during the post-natal period, this additional care would be reflected in better care and supervision of the infant.

Mental hygiene is receiving more of the attention of health officials which it rightly deserves.

Full-time county health units for rural districts are gradually superseding the old form of part-time and poorly paid health officer. Health departments are being staffed with properly trained and qualified officials, thanks to the assistance given through the Connaught Laboratories Fellowships at the School of Hygiene, University of Toronto, and to the International Health Division of the Rockefeller Foundation.

The health service of the Canadian Medical Association prepared by the members of the Committee on Public Health and Education, and presented regularly in 137 daily and 170 weekly newspapers as press articles, is of inestimable educational value.

Finally, State Health Insurance about which there is at present so much discussion, is occupying the serious attention of governments, laity, health departments and medical practitioners. The governments and the laity are rightly looking to the health departments and the medical practitioners for leadership and guidance in the attempt to bring about a satisfactory solution of this question.

In closing, may I express the hope that as a result of our deliberations at this meeting we will be brought more closely in touch with what is new in public health, and what, through the experience of others, it is considered can be discarded; may this anniversary of our Association be as a beacon light to so illumine our future pathway of public health effort as to secure a much broader application of the knowledge of medical science.

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60th ANNUAL MEETING

**American Public Health Association**

**WINDSOR HOTEL, MONTREAL, QUE.**

**September 14th to 17th, 1931**

# Radium---Its Proven Uses and Limitations in Therapy

G. E. RICHARDS, M.B. (TOR.)

*Associate in Radiology, University of Toronto,  
Director, Department of Radiology, Toronto General Hospital*

*Editorial Note*—In the portion of this paper which was published in the July issue, Dr. Richards discussed briefly certain general conditions which are essential to an understanding of the action of radium on living tissue, explaining that in any given tumour a number of possible sequences may follow on the administration of a dose of radium. The common conception of radium is that its use is confined to the group of malignant diseases. A discussion of the value of radium in the treatment of non-malignant conditions was therefore presented dealing with such conditions as angiomas, moles, keloid, actinomycosis, diseases of blood and blood-forming organs, hyperthyroidism, toxic adenoma, simple adenoma, menorrhagia and uterine fibroids.

## THE MALIGNANT GROUP

### RODENT ULCER

These lesions being of the basal cell type are radio-sensitive and the results of treatment are usually prompt and excellent. The majority of rodent ulcers can be permanently cured by surface applications of radium so long as the disease is limited to the skin, but once it has extended beneath the skin so as to involve the subcutaneous tissues, and, particularly, if it has involved bone or cartilage, it becomes much more difficult. Similarly, if it has been unsuccessfully treated by other methods, particularly by the use of caustic pastes or irritants, or has been unsuccessfully treated by X-Rays or radium, the outlook is entirely changed and some of these cases become so resistant as to defeat all efforts at treatment. It is, therefore, important that these cases should be recognized early and treated effectively at once. The advantage of the treatment is its thoroughness, its permanency and lack of scarring. The scar which results from radium under these circumstances is better from a cosmetic standpoint than the scar which results from most of the other methods of treatment which are effective in the disease.

### *Epitheliomata*

Epitheliomata of the skin are usually more resistant to radium than are rodent ulcers, and accordingly require a heavier dose, but given a suitable dosage properly measured, the vast majority of epitheliomata can be cured by this means. If the epithelioma has

infiltrated deeply, we believe it is better treated by means of highly filtered needles than by any attempt at surface applications. Occasionally this method is combined with electro-coagulation, by which the lesion is entirely destroyed and radium used. The result involves more scarring, but by this means excellent results and permanent cures of the majority of epitheliomata may be obtained. Here again the plea is for early recognition and adequate treatment at the first attempt. By so doing fully 95 per cent of all skin cancers may now be permanently eradicated.

#### ORAL CANCER

Improvements in the use of radium have almost revolutionized the treatment and the outlook in this disease. Radium in the form of highly filtered needles may now be expected to cure a much higher percentage of primary lesions, in the lip, tongue, buccal mucosa, tonsil and hypopharynx, than has ever been possible heretofore. The following statement of the percentages with which lesions in different portions of the oral group may be expected to be cured will be found substantially accurate.

*The Lip*—Pre-cancerous lesions, 100 per cent. Early epithelioma without glandular involvement, 90 per cent. Epithelioma of the lip with infiltration and glandular involvement, 50 to 75 per cent.

*The Tongue*—Tip of tongue, 40 per cent. Dorsal surface of tongue, 17 per cent, lateral border of tongue, 19 per cent, base of tongue, 11 per cent.

*Buccal Mucosa*—20 per cent.

*Tonsil*—25 per cent.

*Hypopharynx*—40 per cent.

The problem of oral cancer is greatly complicated by involvement of regional lymphatics and here the real problem arises. Such cases may either be treated palliatively by the use of radium in the form of buried needles or seeds, or by external radiation, or, on the other hand, by a judicious combination of surgery with radium. For a fuller exposition of this whole question the reader is referred to articles dealing with the subject.

#### CARCINOMA OF THE GASTRO-INTESTINAL TRACT

##### *Oesophagus*

This is a group in which the results of radium and X-Ray treatments have been extremely disappointing. It would seem reasonable to expect here results somewhat comparable to those which have been obtained in the oral cavity, and yet all attempts to apply to this problem the principles found effective in the mouth have generally failed. There is no insuperable difficulty in applying radium either in the form

of needles, seeds, or tubes within the oesophagus, and yet this has not resulted in any high percentage of cures. At the introitus oesophagi some success has been obtained. Lower down in the oesophagus treatment seems to be quite as effective by means of high-voltage X-Rays as by any method so far devised of applying radium, and inasmuch as this is a much simpler and easier procedure from the patient's standpoint, we believe it is now the method of choice. Even here the results are not brilliant, and very few, if any, permanent cures are being obtained. We have had numerous cases who could swallow only fluids reach a point following high voltage X-Ray treatment where ordinary solid foods could be taken freely without distress, and under these conditions patients have lived for from six months to three years, but sooner or later, the disease has recurred and all these patients have ultimately succumbed to the disease. Therefore it is considered that only palliation may be expected in carcinoma in this location.

#### *Stomach*

In the stomach the situation is even more depressing. The cell is of the adeno-carcinoma type, highly resistant and many other technical difficulties interfere in such a way as to render almost insuperable the problem of effective irradiation. X-Ray treatment is of value in this disease because of its ability to relieve the pain of the later stages almost completely but without the toxæmia of morphia.

#### *Colon and Rectum*

In the colon, generally, surgery is still the method of choice and if the disease can be dealt with by this means, we believe it should be so treated. In the rectum there has been much more progress in the field of radium therapy than in the remainder of the colon. In early cases of carcinoma low down in the rectum and at the anal margin, cures may definitely be obtained by radium therapy, and when this occurs the patient is spared the necessity of a colostomy. This is especially true of lesions situated on the posterior wall, and in these the progress made has been sufficient to justify a preliminary attempt by radium before a colostomy or radical excision is decided upon. If a prompt and satisfactory result is not obtained, the more radical procedure may be undertaken. These are cases which from a surgical standpoint would be regarded as operable, and there still remains the decision between these two methods of treatment. Further data will be necessary before any final judgment can be arrived at on this point. Sir Charles Gordon Watson reports that of twenty-seven operable cases which were treated by radium rather than radical surgery, six are apparent cures for periods varying from one year to two and a half years, which is a percentage slightly over 22.

In the more advanced cases which are frankly inoperable, the use of radium is on a less controversial footing, and here the degree of

palliation which can be obtained is much greater than has been possible in the past. In all such cases a colostomy should first be established and following this the growth is treated by removing the coccyx and a portion of the sacrum and exposing the growth through the perineum. Following this it is very thoroughly needled by means of heavily filtered needles and these are also introduced along the deep lumbar glands as high up as possible. The degree of palliation which follows such a treatment is frequently astonishing and in some cases all evidence of the disease disappears. Since more than 50 per cent of these patients already have remote metastatic deposits in the liver or elsewhere, the number of permanent cures will always be small. Yet there will be a few cases in whom apparent cures will be obtained. In our own work we have several patients alive and apparently free of disease ranging from one to three years and other writers have obtained similar results which amply justify hope for the future in this disease.

#### CARCINOMA OF THE UTERUS

The treatment of carcinoma of the cervix of the uterus is probably better understood and on the whole more successful than any other field in malignant disease, although the oral group is rapidly approaching it as the technique becomes improved. It should, therefore, be possible to state with fair accuracy what may be expected from the use of radium in this location. From the standpoint of radiation therapy in this disease, there have been two schools, one making use of radium alone and a second, chiefly in Germany, using deep X-Ray therapy alone. Finally, as was to be expected, these have been combined, and in a recent article by Heyman from Radium Hemmett, Stockholm, a comparison of results is given from which the relative value of the use of radium alone or the combined treatment may be drawn. These figures are as follows: Inoperable cases, radium only, 9.4 per cent of cures, combined treatment, 17.6 per cent of cures; operable cases, radium only, 42.8 per cent of cures, combined treatment, 52.1 per cent of cures. It will thus be seen that the addition of high-voltage X-Ray therapy to the use of radium in these cases is responsible for approximately a 10 per cent increase in cures, and this is the method which is at present being followed as a routine in Radium Hemmett. It also may be taken to indicate that the possibility of cure in a reasonably early carcinoma of the cervix is 52 per cent, while if the disease is unrecognized until a later state this falls off very rapidly and is about 17 per cent, a further plea, if any were necessary, for early, accurate diagnosis and adequate treatment of all cases of carcinoma of the cervix.

#### *Treatment of Carcinoma of the Body of the Uterus*

Until very recently it has been considered that this disease was



suitable only for operation and was excluded from the field of radium therapy. It is interesting to consider the most recent statistics on this question. A recent paper by Burnham gives the following summary of the treatment of this disease by several methods as follows:

*Cases Treated by Operation alone*

Total cases.....	11
Living and well after 5 years.....	50 per cent
One case lost sight of which if excluded would leave the five-year cures 60 per cent.	

*Cases Treated by Radium alone*

Total cases.....	46
Living and well after 5 years.....	55 per cent
Excluding those known to have died of other causes than cancer, the cure rate is 69 per cent. If the cases dying of other causes than cancer and with no evidence of cancer are put in the cured list, the cure rate would be 74 per cent.	

*Cases Treated by Radium and Operation*

Total cases.....	11
Living and well after 5 years.....	55.5 per cent
Excluding one case lost sight of.....	62.5 per cent

In summing up these results Burnham says: "In operable cancers of the body of the uterus, radiation offers a method of treatment comparable to the best surgical treatment in its permanent results. It obviates to a large measure at least primary mortality and is applicable to a large number of patients who are bad surgical risks. Radiation offers a possibility of cure in a considerable percentage of inoperable and recurrent cancers of the body of the uterus."

#### CARCINOMA OF THE BREAST

Carcinoma of the female breast still remains one of the major problems in therapy. The field of radium in this disease has been somewhat restricted in the past, and the present remarks will include both radium and X-Rays for purposes of simplicity and completeness. This may be discussed under several headings depending upon whether these agents are used for the treatment of the primary lesion without operation; as a purely pre-operative treatment; or, finally, as a post-operative treatment in the expectation of reducing the percentage of recurrences.

*Primary Lesions*

In the early period surface applications alone were used and this was later followed by needling and more recently still by a combination

of needling of the breast itself followed by surface applications of radium packs after a suitable interval. Considerable more experience will be necessary before an accurate statement can be made as to the relative values of this method of treating primary carcinoma of the breast as compared with surgery. For the present it may be said that under such a method of treatment small tumours commonly disappear completely, larger ones take a longer time and in some cases do not disappear completely, while in some of these removal of the breast and microscopic examination shows the presence of carcinoma cells capable of growth.

There is a considerable mass of evidence being accumulated which is in favour of the above method of treatment in certain carefully selected types of cases, and it undoubtedly fills a well-defined need in this disease. It probably will never replace radical amputation of the breast.

#### *Pre-operative Radiation to be Followed by Surgery*

This procedure is included to some extent in the above paragraph. Such treatment may take the form either of a surface application using heavy doses in packs or packs combined with high-voltage X-Rays, or occasionally by the use of needles. In many of these cases the mass disappears to such an extent that it is no longer palpable, and yet, on section, cells capable of growth are discovered. It is, therefore, of the utmost importance that in any such case the radical removal should be done. The difficulty in these cases, however, is that at this point the patient frequently refuses to go on with the radical amputation and sooner or later the mass recurs. Under these conditions the operation is undertaken in the presence of an actively growing carcinoma. We, therefore, believe that treatment should be given with a definite understanding arranged with the patient as to its nature and what may be expected from it, and then the operation should be done at the optimum time. This time we believe to be the period at which the maximum regression of the growth can be shown to have occurred. So long as the mass is diminishing the operation should be withheld, but as soon as the mass is no longer shrinking the breast should be removed before any increase occurs.

#### *The Post-operative Treatment*

As a post-operative measure X-Rays have been more commonly used than radium for purposes of prophylaxis, radium being of greater service in the treatment of actual recurrences. Probably at the present time the greatest field is in the prophylactic use of radiation in an attempt to reduce the percentage of recurrences. It is, therefore, of importance to know what is being accomplished by this method. There is a large volume of statistics available on this subject, the essential features of which may be summarized as follows: The percent-

age of patients alive and well following surgery alone varies tremendously, but may be said to average about 30 per cent at the end of three years and 20 per cent or less at the end of five years. Figures in a large series of cases treated by surgery followed by effective X-Ray therapy show from 50 to 75 per cent alive and well, free of disease at the end of three years and from 40 to 50 per cent alive and well at the end of five years. Generally speaking it may be said that the addition of *adequate* irradiation by means of high-voltage X-Rays cuts down the percentage of recurrences about 25 per cent, and is, therefore, very decidedly a procedure which should be adopted in any case of carcinoma of the breast in which the regional lymph glands are involved at the time of operation.

#### CARCINOMA OF THE BLADDER AND PROSTATE

The use of radium in both of these groups is still in the period of transition in which its exact field of usefulness is difficult to state with accuracy. In certain types of tumour it appears to be of doubtful value. In others considerable palliation may be obtained. The percentage in which an actual cure is obtained is small. In the majority of cases the best results are obtained by the use of radium needles embedded as a part of the major surgical operation, the most desirable form being through a suprapubic opening of the bladder.

#### CARCINOMA OF THE THYROID

As a group, carcinomas of the thyroid are fairly radio-sensitive tumours and the degree of growth restraint which may be exercised is frequently quite spectacular. In a recent survey of one group of cases in our own records it was found that practically 50 per cent were alive and well five years after treatment had been instituted. These patients may not be permanently cured and may even ultimately die of the disease but in the meantime are enjoying good health with very little inconvenience and no present indication of activity of their cancers. It is futile to suggest that if they are not permanently cured the treatment has been a failure. We have no other means at our disposal which can make as good a showing in the type of cases included in this survey, practically all of which had been operated upon and found to be irremovable.

Several quite massive cases of carcinoma of the thyroid have been held in abeyance for years by a combination of radium packs and high-voltage X-Ray therapy.

Such results amply justify the claim that every case of carcinoma of the thyroid should be submitted to radiation treatment. Many lives may thus be prolonged and in a fair percentage permanent cures

may be obtained. If the five-year survival rate is accepted as a "cure" the percentage will be about 50 per cent and this we consider decidedly worth while and encouraging.

#### SARCOMA

In the sarcoma group we again find two extremes, *viz.*, the lympho-sarcoma which is a type of cell extremely radio-sensitive but tending to become disseminated early and, on the other hand, osteogenic sarcoma which is one of the most resistant of all tumours. In lympho-sarcoma the lesions frequently melt away with astonishing rapidity, but permanent cures in this disease are difficult of attainment owing to its tendency to rapid dissemination throughout the body. Frequently this is the deciding factor. If the disease is localized or, at least, is not widely disseminated, a cure is possible. If it is very widely disseminated, a cure is extremely unlikely.

##### *Mediastinal Sarcoma*

Mediastinal tumours are frequently in the group of radio-sensitive tumours and all should be given the benefit of this method of treatment. In a considerable percentage the tumours will entirely disappear and many of these results are permanent. The same general remarks may be made regarding "Hodgkin's disease". In this disease the glandular masses are slightly more resistant than lympho-sarcoma but still are among the radio-sensitive tumours and frequently rapidly disappear, so that within a few weeks from the time of treatment all evidence of glandular masses will have disappeared. Similar results may be obtained by means of high-voltage X-Rays, and in the latter there is an additional advantage in that practically the entire lymphatic system may be irradiated, so that not only the glands which are palpable may be treated but all glandular areas in which the disease may be expected to occur. In this disease, however, there is a tendency to recurrence and the percentage of permanent cures is small. The degree of prolongation of life varies and the more recent figures would indicate that this is gradually improving, so that it is not uncommon for patients to live from five to ten years following treatment, whereas a few years ago three to five years was considered about the limit.

##### *Periosteal Sarcoma*

In the group of periosteal sarcomata a small percentage of permanent cures may be obtained and it is in this group, together with the form of sarcoma known as Ewing's tumour, in which most of the cures which have been reported have been obtained. The results are sufficient to justify its use in all such cases before undertaking amputation.

*Osteogenic Sarcoma*

In osteogenic sarcoma practically no cures have been reported and unless some radical improvement takes place in X-Ray and radium therapy the outlook in this disease remains extremely bad. At the present time we believe that every case of suspected sarcoma of an extremity should be submitted to a preliminary radiation by means of high-voltage X-Rays or radium in order to test its degree of sensitivity to these agents. If it should prove to be a sensitive type of tumour, a limb may be saved and, while the percentage of such cases will always be small, the occasional success is quite sufficient to justify all the energy expended. Inasmuch as an amputation, however early, practically never saves the life of these patients but only prevents an ulceration locally, this procedure is justified on this ground also, *i.e.*, the patient's hope of cure is not jeopardized by the delay consequent upon the administration of the radiation treatment.

## GENERAL SUMMARY

The above is an attempt to state the more important uses of radium therapy as they exist at the present time. But the term "radium therapy" does not sufficiently cover the field. A more correct term is "radiation therapy" including both X-Rays and radium. Future possibilities by improvements in X-Ray therapy are very promising, and there is danger that one may think of cancer therapy in terms only of radium. Indeed certain literature conveys the impression that in this field one thinks only of the insertion of radon seeds. This is an important part but still a very small part of the whole range of radiation therapy which includes radium in its manifold forms and varieties of application and also includes the full range of X-Ray therapy which will shortly be available in wave-lengths ranging from those produced at 140,000 volts up to a million or even more volts, thus approximating very closely the wave-length of radium itself, and already known as "artificial radium".

## Canadian Public Health Association

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# A Study of Epidemic Catarrhal Jaundice\*

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THE cause of epidemic catarrhal jaundice is obscure, and it deserves more study than it has received on this continent. The Director of the United States Public Health Service† states that while there have been a number of outbreaks in the United States in the last few years, no special study of the disease has been made by any member of the Public Health Service.

The most noteworthy studies, from an epidemiological standpoint, which have been made in the United States are those of Blumer<sup>1</sup> and Wollenberg.<sup>2</sup> The Canadian literature is scanty and has been included by Bates<sup>3</sup> in his bibliography on leptospiral jaundice. Recent reports from the British Isles are those of Ross,<sup>4</sup> Booth and Okell,<sup>5</sup> Pickles,<sup>6</sup> and Thomas.<sup>7</sup>

For such bacteriological and serological evidence as has been presented, we are indebted chiefly to European investigators, and the most significant of those studies are mentioned by Klemperer, Killian, and Heyd<sup>8</sup> in their valuable paper on the pathology of icterus catarrhalis.

Despite the useful and detailed studies of Jones and Minot<sup>9</sup> in their attempt to establish a clinical entity for infectious (catarrhal) jaundice, we incline toward the suggestion of Rich<sup>10</sup> that "this condition probably represents a *mélange* of types of benign icterus of different etiologies."

Certainly a study of the many epidemics described by various investigators does not point to a common agent of infection and a common type of pathogenesis. We are forced toward the conclusion that epidemic catarrhal jaundice may be divisible into several types, with different etiologies, different infection atriia, different pathogenesis, and having in common only that dominant symptom of so many hepatic dysfunctions, jaundice and its usual accompaniments.

It is not our purpose in this paper to attempt any such differentiation, nor to outline any characteristic syndrome for each of these types. The object of this paper is to present the results of some bacteriological and serological studies of icterus catarrhalis occurring recently in epidemic form in the Maritime Provinces. If such studies make any contribution toward a better understanding of the etiology and epidemiology of this disease, and if there is thereby produced any interest or outgrowth of practical public health value, this paper will have served its purpose.

\*Presented at the Annual Meeting, Canadian Public Health Association, June, 1931, Regina, Saskatchewan.

†Personal communication.



## AN EXTENSIVE OUTBREAK OF JAUNDICE

In three educational institutions—Mount Allison University, Mount Allison Ladies' College, and Mount Allison Academy, located at Sackville, New Brunswick, there developed during December, 1930, and January, 1931, an extensive outbreak of jaundice, reaching a total of 173 cases.

We decided to use this opportunity for intensive studies toward determining the cause. The following results are presented as a preliminary report. As this paper will be followed by publication at a later date of additional studies including other epidemics, we have submitted it in partly condensed form, omitting tabular statistics and details of technique wherever possible, and reporting only the general substance of our observations.

*Outline of Studies*

The following investigations were decided upon:

1. *History and clinical data.*
2. *Extent and distribution of the disease, both locally and in other districts.*
3. *Bacteriological and serological studies to determine the possibility of infection with *Leptospira icterohaemorrhagiae* or other leptospiras.*
4. *Bacteriological examination of food supplies.*
5. *Bacteriological examination of milk supplies.*
6. *Bacteriological examination of water supplies.*
7. *Bacteriological and serological examination of patients' blood, particularly by agglutination tests.*

## 1. HISTORY AND CLINICAL DATA

The jaundice epidemic had an important antecedent. About three weeks before jaundice developed, practically all of the 620 students in residence experienced a sharp attack of gastro-enteritis. We therefore give the clinical description in two distinct phases:

*Gastro-enteritis:*

The gastro-enteric disturbance occurred almost simultaneously among practically all the students in 5 of the 7 residences, thereby affecting about 600 students.

The great majority of the cases experienced epigastric pain, some of them so severe as to require an opiate. Sharp rises of temperature were common, some of them reaching 102° and lasting for several days. Some, however, were afebrile when seen. In almost all of these patients there was an acute diarrhoea, which in some extreme cases lasted for two or three weeks. In two cases, physicians in other communities dealing with students who had returned to their homes, suspected typhoid fever.

A few cases were mild and were limited to diarrhoea for two or three days, accompanied by general malaise and slight fever.

Vomiting occurred in a few cases.

#### *Jaundice:*

The first manifestations of jaundice appeared from 18 to 35 days after the gastro-intestinal disturbance. The average time lapse was 25 to 27 days. The symptoms were: a febrile period occurring several days before the onset of actual jaundice and reaching 101° in observed cases, and accompanied by grippe-like symptoms of general muscular soreness, headache, and backache; there then developed nausea, vomiting, and a very marked icterus, very intense in many cases and lighter in others. The icteric colour was of the clear bright yellow type, with none of the bronze type. *The majority of cases had normal stools for the first four or five days before the acholic type of stool developed.* As a rule the stools then grew lighter in colour, later becoming clay-coloured in almost all cases. There was the usual lassitude, and in the severe cases great weakness and depression. Pruritus was common. The sclerae were very yellow, the colour persisting for two or three weeks after the skin had regained normal colour. There was no splenomegaly. Palpation in most cases showed the liver to be enlarged 1½ inches below the costal margin; the edge was rounded and there was distinct tenderness.

## 2. EXTENT AND DISTRIBUTION

### *Local:*

The local epidemic was almost completely confined to students living in the various college residences. The town of Sackville (population of about 2500) had no coincident epidemic. There were only a very few cases in town, and two of the families affected gave a history of having used the same spring water which was responsible for the gastro-enteritis among the students.

In the preceding summer there had been a few cases in the district within a radius of a few miles of the town.

There are seven residential buildings connected with Mount Allison institutions, housing 620 students.

### *Epidemics in Other Districts:*

Hearing of jaundice epidemics in other districts led us to secure reports from physicians in thirty-six districts in the Maritime Provinces. Eighteen reported jaundice as being distinctly prevalent, and the other eighteen reported few cases or none. Of the eighteen districts in which jaundice was more or less prevalent, thirteen reported it in epidemic proportions, and the other five reported cases of scattered and irregular incidence. One district reported an epidemic of 60 cases or more, whole families being affected. Over 50 cases were reported from

another district. Two reported epidemics in previous years but none at present. Two or three physicians stated that there is a regular seasonal recurrence of jaundice in their districts, occurring in the autumn. One physician writes: "My experience has been that we usually have an epidemic of jaundice following a very dry summer, and the infection follows fall rains." Several others suggest that low rainfall and impure water supplies seem to be of importance in this connection. The possible relation of impure water to epidemic jaundice has been mentioned in text-books and is regarded as significant by some observers.

TABLE I  
DISTRIBUTION BY RESIDENCES

No. of students in residence		No. who had gastro-ent.	No. who had jaundice	Remarks
Residence A	86	Practically all	42	Gastro-enteritis outbreak two weeks before other residences.
" C	190	" "	53	
" R	206	" "	38	
" L	49	" "	17	
" H	66	" "	22	
" D	13	2	1	2 students drank water in Residence C. Drank no water other than the town water.
" F	10	0	0	
Total 620		About 600	173	27.9% of gastro-enteritic cases developed jaundice.

Hearing of water shortages and bad water conditions from many quarters, we secured information as to rainfall and water conditions from forty-nine Maritime districts. Only seven reported normal rainfall. Sixteen reported rainfall as being much less than usual. Twenty-six reported hot dry weather with very deficient rainfall, and many of these reported extreme shortage of water and generally bad water conditions. There seemed to be some general coincidence between the prevalence of epidemic jaundice and bad water conditions, particularly when we compare the relative incidence in normal seasons.

### 3. LEPTOSPIRA STUDIES

It has been suggested by several writers that jaundice epidemics of this type might be caused by a less virulent strain of *Leptospira icterohaemorrhagiae*. We therefore felt it necessary, despite the fact that the epidemic under study had neither the severity nor the clinical picture of leptospirosis

icterohaemorrhagica, to make careful studies toward determining or excluding the possibility of a leptospiral infection.

Urine specimens from a series of typical cases were centrifugalized and the sediment was examined under the dark-field microscope. A second series was examined by Burri's India-ink method. A third series was used for microscopic preparations stained by Kliewe's method. None of the urine specimens showed leptospiras of any sort, by any of the three methods of examination.

Animal inoculation with centrifugalized urine sediment from two cases was performed:

*Patient W. E.*, a severe case with prolonged icterus; urine clear and strongly bile-stained, bacterial count not high; centrifugalized sediment slight; guinea-pig inoculated intraperitoneally with 1 c.c. of the sediment; the animal showed no reaction of any sort at any time and remained in perfect health.

*Patient W. H.*, a moderate case but with prolonged icterus; urine bile-stained, with dense turbidity and a very high bacterial content; centrifugalized sediment very large in quantity, thick and almost cheesy; guinea-pig inoculated intraperitoneally with 1 c.c. of the sediment; the animal died in two days; autopsy revealed a few pus patches in the abdominal cavity; the gall-bladder did not contain normal bile but a pale grayish fluid, dirty and turbid, and only faintly yellow; there was no evidence of jaundice or haemorrhage in either the abdominal or thoracic cavities, or elsewhere.

In passing, it would seem desirable in animal inoculations with urine to use only catheterized specimens, in order to avoid the bacteria of the anterior urethral tract, some of which are frequently responsible for fatal peritonitis or pyemia in animals inoculated by the intraperitoneal route.

We regret that we were unable to secure an adequate number of blood specimens at the necessary period (the first six days of the disease) to be used for blood culture, animal inoculation, and microscopic stained preparations.

A thorough serological study, however, was made to determine the presence of anti-leptospiral antibodies. Through the courtesy of Dr. Evelyn B. Tilden of the Rockefeller Institute for Medical Research, a culture of *Leptospira icterohaemorrhagiae* was obtained. Forty sub-cultures were made, twenty in each of Noguchi's<sup>11</sup> two media. All gave successful growth. Thirty-seven gave rich growth and three gave scanty growth. Only two were contaminated. Successful culturing of this organism demands rigid adherence to the technique of Noguchi. We attempted twenty sub-cultures in five other media of our own devising, using various combinations of blood, serum, and ascitic fluid. None of them were satisfactory.

Using the richest sub-cultures, we performed agglutination tests on a wide range of serum dilutions from cases of varying severity. At first we thought that the frequent clumping observed might indicate some degree of specific agglutination, but continued repetition of the tests, checked by careful controls, proved this type of clumping to be a non-specific pseudo-reaction.

Grovas<sup>12</sup> attributes this spontaneous agglutination to the presence of agar in the medium, and shows the desirability of a reduced agar concentration.

The agglutination tests showed no specific agglutination, and no lysis whatever.

The Pfeiffer reaction was performed according to Noguchi's technique (described by Dr. Tilden in a personal communication) and was entirely negative.

#### *Rat Infection*

Following the work of Noguchi,<sup>13</sup> Jobling and Eggstein,<sup>14</sup> Neill,<sup>15</sup> Langworthy and Moore,<sup>16</sup> Cameron and Irwin,<sup>17</sup> and Ridlon<sup>18</sup> (to conserve space we give only the North American investigators, as the literature includes twenty-three other reports from many parts of the world) we decided to investigate the possible occurrence of *Leptospira icterohaemorrhagiae* in wild rats in our own district. Following Cameron's procedure, we made the following studies:

1. Thirty-two wild rats were obtained. Eighteen were from the town of Sackville, ten were from other villages in the district, and only four were from buildings on the college campus.

2. In all cases kidney tissue was thoroughly macerated in saline, and the emulsion was examined under the dark-field microscope for leptospires.

3. In ten of the specimens examined, microscopic slide preparations were made from the saline emulsion and stained by Kliewe's method.

4. Where the dark-field examination showed any organisms resembling leptospira, guinea-pigs were inoculated intraperitoneally with 1 c.c. of the saline emulsion from that specimen.

Of the thirty-two rats examined, only one showed the presence of a leptospira morphologically indistinguishable from *L. icterohaemorrhagiae*. Animal inoculation showed that this organism was non-pathogenic. Three other specimens which showed an occasional leptospira-like organism (smaller than *L. icter.*) were also tested by animal inoculation. None of them had any pathogenic power.

The fact that only four rats were taken from buildings on the campus would not indicate much likelihood of a rat-borne leptospiral infection.

#### *Water Leptospires*

Free-living water leptospires have been studied by Wolbach and Binger,<sup>19</sup> Noguchi,<sup>20</sup> Uhlenhuth and Zuelzer,<sup>21</sup> Shiga,<sup>22</sup> Etchegoin,<sup>23</sup> Stevenson,<sup>24</sup> Hindle,<sup>25</sup> Burgess,<sup>26</sup> Uhlenhuth and Grossmann,<sup>27</sup> Bauer,<sup>28</sup> Buchanan,<sup>29</sup> and Walker.<sup>30</sup> It has been suggested by several observers that under certain conditions water leptospires might prove pathogenic. Buchanan (*loc. cit.*) inoculated two guinea-pigs with water leptospires; both animals died, showing pronounced evidence of leptospiral jaundice, and abundant leptospires were present in all their organs, also in the blood and the urine. Buchanan also mentions that Uhlenhuth and Zuelzer reported a water saprophyte to have acquired pathogenic properties in culture medium. Tohyama<sup>31</sup> showed that soil and water conditions may attenuate a virulent leptospira. It is not unreasonable to consider the possibility of a return of virulence under favourable conditions.

"Uhlenhuth and Grossmann believe that water leptospiras may become commensals of the rat and possibly display specific pathogenicity." (Cameron.)

On the other hand, Stevenson found negative results in rats which had been injected with water leptospiras. Etchegoin was unable to produce jaundice by animal inoculation with massive doses of water leptospiras from the river Vesle at Reims. Young people who bathed in this river had contracted jaundice. Cameron found that an impure culture of water leptospiras, morphologically identical with *L. icter.*, failed to produce jaundice in the guinea-pig.

In order to test out the possible pathogenicity of water leptospiras in the water supplies used by the students, cultural, serological, and animal inoculation studies were made. As water from three different sources was used, cultures were made from all three. Cultures were made by the method of Walker (*loc. cit.*) and also by the method of Bauer (*loc. cit.*) who uses two grades of Berkefeld filtration and a special medium. We obtained good results using Walker's method, but in our hands the Bauer method did not yield any positive cultures. Two of the three water supplies yielded leptospiras. Three guinea-pigs inoculated with large doses of these leptospiras did not develop any signs of disease.

Agglutination tests on water leptospiras were performed with different dilutions of the serum of several patients. There was no agglutination at any dilution and no lysis.

The foregoing studies on leptospiras, plus the clinical observations, give reasonable ground, we think, for eliminating every possibility of a leptospiral etiology.

#### 4. FOOD

Each of the seven residences has its own food supply and its own kitchen and dining-room. There is no common dining hall. There was no item of food which was used in common in the various residences, and despite the fact that the gastro-enteritis outbreak showed some of the symptoms of food-poisoning, the possibility of food as a factor was easily ruled out.

#### 5. MILK

The milk supply for the various residences comes from four sources—the College Farm, and three dairy farms in the vicinity of Sackville. None of the milk is pasteurized.

Samples of milk were secured on two occasions from each residence. The following counts were obtained: 49,000; 216,000; 567,000; 271,000; 2,504,000; 456,000; 473,000. In the qualitative examinations, one sample showed a heavy faecal contamination with colon bacilli and *Cl. welchii*; another showed a much smaller content of colon bacilli and a considerable amount of *Aerobacter aerogenes*; a third gave strong



*Cl. welchii* "stormy-clot" fermentation in one-tenth c.c. implantations; a fourth gave a very high count of streptococci, but they were apparently normal non-pathogenic streptococci; outside of their objectionably high counts, the other samples showed nothing of interest. In addition to the standard methods, special methods involving inhibitive and selective media were used. No pathogen was found.

As the milk is supplied to different residences from different sources, and as the epidemic affected the five residences regardless of the milk supply, it seems reasonable to rule out milk as the vehicle of infection.

## 6. WATER

Due to a very dry summer and an acute water shortage, the water in the town reservoir was extremely low. Construction work to enlarge the reservoir resulted in further unfavourable conditions. The water was brown in colour, heavily turbid, high in organic sediment, and of very unpleasant odour and unpalatable taste.

Starting in October, we made at different intervals a total of eight bacteriological examinations of the town water. Several of these were of a very intensive nature, using a very wide range of special media in addition to the standard methods.

Plate counts were extremely high at all times, as were also the anaerobic counts.

The first four tests did not yield gas from any quantities less than 10 c.c., in any of the four fermentation-tube media used. The gas-formers present were mostly attenuated aerogenes types. No colon bacilli of faecal origin were in evidence.

The fifth test, made after the first heavy rainfall in months, showed colon bacilli in all quantities. The sixth and seventh tests showed colon bacilli in 10 c.c. quantities only. The eighth test, made during the spring thaw, showed colon bacilli again in all quantities.

There was no gastro-enteric sickness at any time among those using the town water. As a precautionary measure, however, we advocated boiling all drinking water. We also recommended to the town authorities that water samples be sent to the laboratory of the Provincial Department of Health. This was done, and the Director of the laboratory reported the water unfit for use and advocated chlorination.

From an institutional standpoint, the boiling and cooling of water in large quantities is difficult to carry out, and the college authorities preferred to secure water from a farm well outside of Sackville. This was drawn in each day and placed in cans in the corridors of the residences. After a time the well-water supply was exhausted, the well having been pumped dry three times. The college authorities then shifted to the use of an open spring, located at the edge of the campus. No bacteriological examinations of either the farm-well water or the spring water were requested before they were put into use.

As the open spring was located very near to Residence A, this residence was the first to use that water. Shortly after the use of this water commenced, an epidemic of gastro-enteritis (already described) broke out in this residence. Two weeks later, four other residences (C, R, L and H) began to use this same spring water, and the experience of Residence A was repeated, a simultaneous attack of gastro-enteritis occurring in all four residences. (At this point the reader is requested to refer back to the table of incidence.)

*Two of the smaller residences, D and F, did not use the spring water. The students in Residence F used only town water, and it was not boiled. They had no gastro-enteritis and no jaundice. The students in Residence D drank the town water boiled, with the following important exception: Two students from this residence drank the spring water provided in Residence C and were shortly attacked by gastro-enteritis, and one of these students developed jaundice at a later date. The other students in this residence had no gastro-enteritis and no jaundice.*

*Students in Residence A used the spring water two weeks before anyone else and developed jaundice two weeks before anyone else. The other residences, when affected, showed the same incubation period as Residence A.*

Following the two epidemics we were requested to make bacteriological examinations of the farm well water and the open spring water.

The farm well was a very deep drilled well, with the pump located in an outhouse, and was free from any ordinary likelihood of surface contamination. Its water showed nothing of any significance in either the quantitative or qualitative examinations and proved to be a safe and potable water.

The spring proved to be an open hogshead set in the ground in an open unfenced grassy space. It was located seventy feet from a main street on which there is continual traffic, and in front of a large foundry. Forty-one feet from the spring and only very little below the spring level, there flows from under the foundry and from the back yards of the foundrymen's houses a drainage ditch, heavily polluted with sewage and road drainage. A little stream of water flows from the spring to the ditch. *On several occasions the ditch water has backed up and overflowed an area immediately surrounding the east side of the spring.* The source of contamination is therefore obvious. In addition, children have often been observed to play in the spring and to throw stones and rubbish into it, and it has had to be cleaned out several times. It has no protection of any kind.

Five bacteriological examinations of this water were made at different times. It showed very great variation in bacterial content. The first test showed an extremely high count, with a very large number of anaerobes. *Cl. welchii* was abundantly present, even in small samples. Colon bacilli were present in 10 c.c. samples only, and then only in two of the six tubes. The second test showed a low count and a smaller proportion of anaerobes. *Cl. welchii* was still

present, but only in large samples, and the water at this time would pass all standard criteria of potability. The third test showed even a better condition than the second. In the fourth test, brilliant green bile fermentation tubes showed 35 per cent of gas from 10 c.c. and 1 c.c. samples in 24 hours, and from 1/10 c.c. in 48 hours. Colon bacilli and *Cl. welchii* were present. The fourth test showed an extremely high count again, and every evidence of heavy pollution with intestinal bacteria.

Despite the extensive use of all standard and many special selective and enrichment methods, we did not succeed in isolating any organism known to be pathogenic. The only organism of possible pathogenic significance was *Cl. welchii*, and it was present in large numbers.

Larner<sup>32</sup> attributes an epidemic of gastro-enteritis (187 cases) in Montclair, New Jersey, to the presence of *Cl. welchii* in the town water. In his paper, he quotes Prescott as saying "I am strongly of the opinion that heavy infection of water with *B. welchii* may give more or less serious intestinal troubles such as we had in Cambridge for a day or two in 1920."

The very variable condition of the spring water was apparently due to intermittent contamination probably dependent upon the condition of the sewage ditch, and perhaps due to manure-infected dust blowing in from the road and to other sources of contamination mentioned.

Six guinea-pigs were inoculated with bacteria cultured from the spring, with the following results:

B 2 received 1 c.c. subcutaneously of a lactose peptone bile culture; slight rise of temperature next day; indolent ulcer formed at site of injection, which cleared up later; no other effect.

B 8 received 3 c.c. by mouth of a liquefied gelatin plate culture of many species of bacteria from the spring; animal became lethargic and obviously sick on the following day; became very thin; temperature steadily subnormal; died in eight days; autopsy showed a peculiar condition of the gall-bladder, which was white, thickened and corrugated, and contained no bile; the cystic duct was also white, thickened, and enlarged; there was no sign of icterus, no haemorrhages, and no lesions of any sort.

B 9 received 1/2 c.c. subcutaneously of the same culture that B 8 received; animal developed the same symptoms of lethargy, emaciation and subnormal temperature that B 8 had shown; died in seven days; the lungs showed haemorrhagic areas; the small intestine was injected and inflamed; the liver, gall-bladder and bile-ducts seemed normal; there was no jaundice.

C 6, C 7, and C 10 received intraperitoneal injections of those organisms from the spring which seemed to represent the dominant intestinal flora present; these animals showed no sign of disease.

We would not care to form any conclusions from the foregoing animal inoculation experiments. The only results that could have definite value would have to be derived from a much larger series of animal inoculations and with the use of pure cultures only. We did not have enough animals at our disposal to make the latter procedure possible.

The spring and the town water contained water leptospiras, which

were shown heretofore to be non-pathogenic. The farm well did not contain leptospiras.

Various writers have been quoted in text-books as considering *Proteus vulgaris* the cause of infectious jaundice. We did not find this organism in any of the water supplies examined, and agglutination tests against laboratory cultures (American Type Culture Collection) were entirely negative.

## 7. AGGLUTINATION STUDIES

A large number of bacteria isolated from the town water, the farm well, and the open spring were subjected to agglutination tests, using the blood from twelve typical cases of jaundice. Only on one occasion was any agglutination observed, and the controls showed that to be spontaneous and of no significance.

At this time a further search of the literature brought to our attention the observations of Cantacuzene<sup>33</sup> on thousands of cases of benign infectious icterus in the Roumanian army. This was shown to be due to *B. paratyphosus*. Brown<sup>34</sup> found that the blood of a child suffering from catarrhal jaundice agglutinated *B. paratyphosus* at 1 in 80. Carnot and Weil-Halle<sup>35</sup> found an instance of icterus due to paratyphoid infection. Lippmann<sup>36</sup> found some cases of icterus due to *B. paratyphosus* and typhosus. Sarraillhe and Clunet<sup>37</sup> found *B. paratyphosus* (atypic) in the blood of patients during an epidemic of benign icterus. Anigstein and Milinska<sup>38</sup> made agglutination tests on 67 cases of catarrhal jaundice, using seventeen different strains of the paratyphoid group. Eighty per cent of their cases agglutinated the Stanley strain of *Salmonella aertrycke*.

Barker and Sladen<sup>39</sup> in 1909 reported on an epidemic of six cases in a Baltimore jail. The epidemic was preceded by gastro-enteritis. Blood cultures were negative. Agglutination tests were made on three strains of paratyphoid bacilli—the Kurth strain (neg.) the Sladen strain (neg.) and the Cushing strain. The last-named strain gave well-marked agglutination at 1-10 and 1-50, and fair agglutination at 1-100.

They concluded that this epidemic was due to paratyphoid infection, either through water or meat, which produced a gastro-enteritis which later extended to the biliary passages causing a catarrhal jaundice.

It was now several weeks since the jaundice epidemic had subsided, and only a few protracted cases were still showing icterus, but we decided to try out a number of sera from recovered cases as well as from those still active.

We performed agglutination tests against suspensions of *Salmonella paratyphi*, *Salmonella schottmülleri*, *Salmonella enteritidis*, and two strains of dysentery bacilli. *The sera in every case agglutinated Salmonella schottmülleri in dilutions of 1-640. Several sera agglutinated Salmonella paratyphi in dilutions of 1-160, 1-320, and 1-640. Agglutinations against Salmonella enteritidis and the two dysentery strains were*

negative. Controls from students and faculty members who had not had either gastro-enteritis or jaundice were absolutely negative.

These results led to an extensive series of agglutination studies. The sera of 26 persons were tested against *Salmonella schottmülleri* and *Salmonella paratyphi*. These sera were divided into five groups:

*Group I*—Sera from 17 persons who had had both gastro-enteritis and jaundice. These were divided into severe, moderate, and light cases.

*Group II*—Sera from 3 persons who had had varying degrees of gastro-enteritis but no jaundice.

*Group III*—Serum from one person (the only one we were able to find) who had severe jaundice but no preceding gastro-enteritis.

*Group IV*—Sera from two persons living several miles outside of Sackville, one of whom was suffering from catarrhal jaundice at the time, and the other had had catarrhal jaundice three months before the Mount Allison outbreak.

*Group V* (control group)—Sera from three persons who had had perfect health throughout the college year, who had not used any water except town water—boiled or unboiled—and who had no gastro-enteritis and no jaundice.

The bacterial strains used were regular laboratory cultures from the American Type Culture Collection:

*Salmonella schottmülleri*, Strain 200 (E. O. Jordan, Univ. Chicago, Strain 251).

*Salmonella paratyphi*, Strain 979, Pirie.

The dysentery cultures were also A.T.C.C. strains.

The *Salmonella enteritidis* strain was from the Burroughs Wellcome Laboratories.

It was now obvious that group agglutinins were present. To determine the major or specific agglutinin, we selected six sera from the first three groups, and resorted to absorption technique.

Saturation of each serum with *Salmonella paratyphi* failed to absorb agglutinins for *Salmonella schottmülleri*, whereas saturation with *Salmonella schottmülleri* completely absorbed agglutinins for *Salmonella paratyphi*, showing the agglutination of the latter to be only group agglutination. It was thus clearly indicated that *Salmonella schottmülleri* was the antigenic organism.

As this is being written, word comes that a blood sample, from a student who suffered a much more protracted illness than the rest and was unable to return to college, was submitted by her attending physician to another laboratory. The finding was "Positive agglutination for paratyphoid."

## DISCUSSION

Eckhardt and others, referred to in Barker's paper, do not consider agglutination reactions reliable when bile is present in the serum. Conradi<sup>40</sup> gives evidence to the contrary. Barker obtained his strongest

agglutinations from the sera of the two patients who were less jaundiced than the other four.

We would point out that in the great majority of our agglutination studies, the serum was taken from ten to fourteen weeks after jaundice had disappeared, and gave very strong reactions.

TABLE I  
AGGLUTINATION TEST OF THE SERA OF 26 PERSONS

Case No.	Gastro-enteritis	Jaundice	Agglut. S. schott. in dilution of	Agglut. S. paratyphi in dilution of	Remarks	
Group I						
1	Severe	Severe	640	640	A protracted case, sick for months; agglutinoids in lower dilutions.	
2	"	"	640	640		
3	"	"	640	160		
4	"	"	640	80		
5	"	"	640	640		
6	"	"	640	320	Gastro-enteritis persisted for three weeks, with slight fever.	
7	Light	Light	160	0		
8	Severe	Moderate	640	160		
9	"	"	640	320		
10	"	None	640	80		
11	"	Moderate	640	160	Jaundice returned several times in the next three months, when fatty or starchy foods were eaten.	
12	"	Severe	640	320		
13	"	"	640	640		
14	Moderate	Moderate	640	320		
15	"	"	640	320		
16	"	Light	640	80		
17	Light	Light	320	80		
Group II						
18	Light	None	640	0	Agglutinoids in lower dilutions.	
19	Severe	None	640	0		
20	Light	"	160	0	Agglutinoids in lower dilutions.	
Group III						
21	None	Severe	640	640		
Group IV						
22	Light	Severe	160	0	Had jaundice 3 months before the college epidemic.	
23	None	Moderate	0	0		
Group V (Control Group)						
24	None	None	0	0		
25	None	None	0	0		
26	None	None	0	0		

This was obviously an infectious disease, affecting hundreds of persons simultaneously, and there was no evidence whatever of person-to-person communication.



It is important to note that in the "control" residences, D and F, there was no gastro-enteritis and no jaundice, save the two significant exceptions pointed out. It is also noteworthy that out of 173 cases of jaundice, we were able to find only one who had had no preceding gastro-enteritis. It seems reasonable, therefore, to consider, as in Barker's epidemic, the jaundice as being a sequel to the gastro-enteritis.

One puzzling question arises, however: Why did not a higher percentage of the gastro-enteritis cases develop jaundice? There must be some immunity factor undiscovered as yet. In this connection, Hennig<sup>41</sup> has shown that in jaundice epidemics in the army "recently enlisted soldiers are more liable to attack than others, even when all are exposed to the same infection."

The mode of infection in various epidemics points to different etiological agents, supporting the suggestion of Langworthy and Moore<sup>16</sup> that "infectious jaundice is not a disease of specific bacterial etiology, but is induced by different pathogenic species which give rise to infections that under certain conditions involve the liver with symptoms of jaundice."

Organisms other than those of the colon-typhoid group must frequently be concerned, as Brugsch and Schürer<sup>42</sup> found this group in very few of their cases.

In reports of fourteen epidemics, exclusive of those studied by Blumer, and totalling 1,678 cases, only three gave a history of a preceding gastro-enteritis; seven were considered as being transmitted by direct contact, and of these two showed a preceding respiratory disease.

It is not the province of this paper to discuss the nature of the pathogenesis involved. The benign nature of the disease will make such studies difficult. Very few necropsy reports are on record at present. Four fatal cases studied by Cantacuzene showed "a severe angiocholitis of the intralobular canaliculi; it was impossible to determine whether the infection was hematogenous or ascending." (Klemperer.)

Until we have a better knowledge of its pathogenesis, we must place the Mount Allison epidemic in either the first or second group of the classification of icterus catarrhalis proposed by Eppinger<sup>43</sup> and of an etiology similar to that shown by Cantacuzene, Barker, and others.

#### PROJECT

We hope, with the co-operation of physicians encountering catarrhal jaundice epidemics in their practice, to make serological studies of blood samples sent in to our laboratory, in order to throw further light on such types as have a demonstrable bacterial etiology.

We are not yet ready to report our findings on the significance of *Cl. welchii* in this epidemic. When certain experimental studies in progress have been completed, the findings will be published in a later paper.

We also hope to make bacteriological studies of the water supply in districts experiencing jaundice epidemics, in order to secure evidence for or against the theory that contamination of water supplies may have some bearing on these epidemics.

#### SUMMARY

1. An epidemic of 173 cases of "catarrhal" jaundice, preceded by an epidemic of 600 cases of gastro-enteritis, has been studied from clinical, epidemiological and bacteriological standpoints.
2. The disease was infectious but not contagious.
3. The jaundice, as in the Eppinger classification, was a sequel of the gastro-enteritis.
4. Infection by food or milk was ruled out.
5. Three water supplies were studied, and the epidemiological evidence tends to incriminate one of them.
6. The organism responsible was not isolated from the water supply in question, and the etiological evidence is purely serological.
7. Agglutination tests in relatively high dilutions indicate that the causative organism was *Salmonella schottmülleri*. Agglutinins for *Salmonella paratyphi* were observed, and were shown by absorption to be group agglutinins.
8. The clinical, bacteriological and serological evidence rules out the possibility of any type of leptospira being the etiological agent. In this connection the distribution of *Leptospira icterohaemorrhagiae* or other leptospiras in wild rats in this locality was studied.

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We also acknowledge our obligation to the various authors from whose papers we have quoted.

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# Classification of Maternal Deaths\*

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IT would seem as if the statistician, the citizen and the physician are all likely to gain from a general discussion of this subject. As our Chairman said last year<sup>1</sup>, "Vital statistics are not an end in themselves, but a means to an end, and that should be the extending of our knowledge of epidemiology, infant and maternal mortality, etc."

There can be no doubt in the mind of anyone present that the work of the Dominion Bureau of Statistics has made a notable contribution to the extension of our knowledge of maternal mortality. Since the establishment of the Dominion Bureau of Statistics by statute in 1918, and much more since the completion of the Registration Area in 1926, making it coincide with the boundaries of the Dominion, our knowledge of maternal mortality has grown by leaps and bounds.

## *Canada and the Provinces*

Table I—prepared by the Dominion Bureau of Statistics—gives the maternal mortality rate for the Dominion of Canada and also for each province, for the years 1921-29. The study and prevention of maternal mortality was not possible until we had national vital statistics.

It cannot be said that these figures show, on the whole, a downward trend, but it is to be remembered that since accuracy and completeness in registration and classification have improved since the establishment of the Dominion Bureau of Statistics, this may account for the small apparent rise in maternal mortality in some of the provinces.

Dr. F. W. Jackson, Deputy Minister of Health for Manitoba, states as follows, in a personal communication:—

"For the past three years all causes of death in women which by any possibility might be classified as puerperal, have been investigated. The response from the medical profession to this investigation has been very gratifying indeed, and the information we are gathering is, I think, going to be of distinct value to us in formulating plans for reducing the number of maternal deaths. As this inquiry proceeds, naturally the number of maternal deaths, classified as such, will increase. This does not mean that the actual maternal deaths are on the increase, but rather that our classification is better. In fact, we think that maternal deaths are on the decrease."

Maternal mortality in Manitoba was in 1927, 5.1; in 1928, 5.1; in 1929, 6.8.

In other words, to make a broad statement of the situation, in those provinces and municipalities where most interest has been taken, where

<sup>1</sup>*Read at the Vital Statistics Section, Annual Meeting, Regina, June, 1931.*

most enquiry has been made and where the grave importance of maternal mortality has to some extent been realized, maternal mortality appears to be higher than in those places where least interest has been taken, where small enquiry has been made and where the grave importance of maternal mortality has perhaps not yet been realized.

TABLE I

MATERNAL MORTALITY RATES FOR THE YEARS 1921-1928  
(Rates per 1,000 living births)

	1921	1922	1923	1924	1925	1926	1927	1928	1929
CANADA	4.7 <sup>2</sup>	5.0 <sup>2</sup>	4.9 <sup>2</sup>	5.2 <sup>1</sup>	5.0 <sup>2</sup>	5.7	5.6	5.6	5.7
Prince Edward Island.....	3.2	3.7	2.5	4.8	8.4	4.6	2.4	6.1	7.8
Nova Scotia.....	4.3	5.5	7.2	6.6	5.4	4.6	6.8	5.2	4.2
New Brunswick.....	4.1	5.1	4.6	4.6	4.7	6.4	6.2	5.8	7.3
Quebec.....	3.8 <sup>1</sup>	4.1 <sup>1</sup>	4.1 <sup>1</sup>	3.7 <sup>1</sup>	3.8 <sup>1</sup>	5.2	4.9	5.3	5.3
Ontario.....	5.2	5.2	5.3	5.8	5.5	5.6	6.0	5.8	5.4
Manitoba.....	4.4	5.6	4.6	5.6	6.4	5.9	5.1	5.1	6.8
Saskatchewan.....	5.7	5.7	5.6	6.7	5.7	7.1	5.4	5.8	6.2
Alberta.....	6.7	6.9	5.6	6.2	5.8	5.9	6.4	6.8	7.3
British Columbia.....	4.8	6.2	6.3	6.8	5.8	6.5	6.7	5.9	5.6

<sup>1</sup>Figures from Provincial Reports.

<sup>2</sup>See Note 1.

### *Special Enquiries*

During the last four years, the officials of the Dominion Bureau of Statistics have made further enquiry in regard to any death certificate where there seemed reason to think that although puerperal causes were not mentioned specifically on the certificate, still such causes might have played a part in the cause of death. This has resulted in some addition to the maternal mortality rate.

The same remark may be made in regard to the maternal death rate of 6.4, as shown by the Report of the Enquiry into Maternal Mortality in Canada for the 59th Year of Confederation—July 1, 1925, to July 1, 1926<sup>2</sup>—made at the request of the First Conference on Medical Services in Canada. Special enquiries resulted in an addition of 28 per cent to the total original number of maternal deaths.

Another enquiry on the same subject which was made in 1921 and 1922 by Dr. W. J. Bell<sup>3</sup>, then Pædiatrician of the Provincial Department of Health of Ontario, gives further confirmation of this. Dr. Bell, by making special enquiries, found that in 1921 the number of maternal deaths was increased from 387 to 483, and in 1922, from 370 to 465, an increase of about 25 per cent.

Sir Arthur Newsholme<sup>4</sup> discusses, in a letter published in the *London Times* of September 15th, 1930, the "stationary high mortality associated with pregnancy and parturition." He says that accuracy of

certification has increased, that abortions have increased and that smaller families have resulted in an increased proportion of first-births to the total. The risk in first-births, he states, is about double that in the next three confinements.

For these three reasons, Sir Arthur Newsholme says, "it becomes obvious that the really improved position for comparable conditions justifies the large amount of medical and social help of voluntary and official efforts which have been devoted to this object. I do not suggest that further efforts are not needed. They are urgently called for. But do not let us proceed on the assumption that efforts already made have been futile."

Criticism, whether vocal or silent, of the results of these special enquiries should not be too severe. There may be, sometimes, a good reason for the physician signing the death certificate to regard puerperal conditions as contributory.

The general rule is that, if the maternal cause of death originated the condition which caused the death, then the maternal cause should be given as the cause of death. For example, a death is reported as due to "Anæmia following pregnancy." On enquiry, it appears that post-partum hæmorrhage occurred. The cause of death here should be registered as "Post-partum hæmorrhage," and the contributory cause as anaemia.

#### *Basis of Calculation*

There is some difference of opinion as to the validity and accuracy of the basis of the maternal mortality rate, namely, so many deaths associated with pregnancy per 1,000 living births. It has been suggested from time to time, that the rate should be calculated on the total number of pregnancies.

In the opinion of the officials of the Dominion Bureau of Statistics, a rate based on 1,000 living births is "free from the accidents of definition, terminology and assignment, and furnishes a better picture. It is the measure of the price paid in women's lives for the introduction into the world of a unit number of infant lives."

#### *Maternal Mortality in Other Countries*

Comparative figures for maternal mortality in other countries appear in Table II, for which I am indebted to the Dominion Bureau of Statistics.

Much labour has been involved in the preparation of this valuable table for many of the countries appearing do not give any separate maternal mortality rate in their annual reports. Some of them compute a rate based on the total population which has little application to the present discussion.

It may also be noted that in France, Belgium and Hungary the number of living births given is the number of children alive when the



birth is registered which, in these countries, must take place within a few days.

How many other variations are there?

Let us hope that the League of Nations may be able to do something to improve the vital statistics of the world and the basis on which they rest.

TABLE II

MATERNAL MORTALITY RATE IN CANADA AND IN CERTAIN OTHER COUNTRIES  
(Per 1,000 living births)

Country	Year	All puerperal causes	Puerperal septi- caemia	Other puerperal causes
Canada .....	1928	5.6	1.9	3.7
Australia .....	1928	6.0	2.1	3.9
Austria .....	1928	—	2.5	—
Belgium .....	1927	5.7	3.1	2.6
British Isles .....	1928	4.8	1.9	2.9
Ceylon .....	1928	19.2	6.6	12.6
Denmark .....	1927	3.1	—	—
England and Wales .....	1928	4.4	1.8	2.6
France .....	1928	2.9	1.1	1.8
Germany .....	1926	4.9	2.5	2.4
Hungary .....	1928	3.4	1.8	1.6
Irish Free State .....	1928	4.9	1.7	3.2
Italy .....	1927	2.6	0.9	1.7
Japan .....	1928	2.8	0.9	1.9
Netherlands .....	1928	3.4	—	—
New Zealand .....	1928	4.9	2.1	2.8
Northern Ireland .....	1928	5.2	1.5	3.7
Norway .....	1928	3.0	—	—
Salvador .....	1926	5.6	—	—
Sao Paulo .....	1925	3.7	—	—
Scotland .....	1928	7.0	2.4	4.0
Spain .....	1928	4.0	2.3	1.7
Sweden .....	1928	2.6	1.4	1.2
Switzerland .....	1928	4.9	—	—
Union of South Africa (Whites) .....	1928	5.0	2.3	2.7
United States (Reg. Area. White population) .....	1928	6.3	1.5	4.8
Uruguay .....	1928	2.4	1.5	0.9

Under the detailed International List before the last revision, the causes listed under the class headed "Puerperal State" were as follows:

143. Accidents of pregnancy

- (a) Abortion
- (b) Ectopic gestation
- (c) Other accidents of pregnancy

- 144. Puerperal haemorrhage
- 145. Other accidents of labour
- 146. Puerperal septicaemia
- 147. Phlegmasia alba dolens, embolism or sudden death in puerperium
- 148. Puerperal albuminuria and convulsions
- 149. Following childbirth (not otherwise defined)
- 150. Puerperal diseases of the breast

Let us see the relative importance of these, as shown by Canadian Vital Statistics. Table III shows the percentage of puerperal deaths attributed to each of these causes in 1927, 1928 and 1929.

TABLE III

MATERNAL DEATHS IN CANADA  
Numerical and per cent distribution by causes, 1927-29

Int. list Nos.	Causes of death	Number of deaths			Per cent distribution		
		1927	1928	1929	1927	1928	1929
143	Accidents of pregnancy						
	(a) Abortion.....	40	30	34	3.1	2.3	2.5
	(b) Ectopic gestation.....	35	41	29	2.7	3.1	2.2
	(c & d) Other accidents of pregnancy.....	27	30	19	2.1	2.3	1.4
144	Puerperal haemorrhage.....	183	173	179	14.1	13.0	13.3
145	Other accidents of labour.....	133	142	164	10.2	10.7	12.2
146	Puerperal septicaemia.....	448	439	462	34.5	33.0	34.5
147	Puerperal phlegmasia alba dolens, puerperal embolism sudden death in puerperium.....	81	90	121	6.2	6.8	9.0
148	Puerperal albuminuria and convulsions.....	310	330	286	23.8	24.8	21.3
149	Following childbirth (not otherwise defined).....	42	55	47	3.2	4.1	3.5
150	Puerperal diseases of the breast.....	1	1	—	.1	.1	—
	All puerperal causes.....	1300	1331	1341	100.0	100.0	100.0

What changes have been made in this list by the International Commission which met in 1929?

(1) Abortions have been divided into two classes, those with septic conditions and those in which septic conditions are not mentioned.

Prior to this change the tabulations of the Dominion Bureau of Statistics, and presumably of other countries, in general, gave the preference to puerperal septicaemia over other puerperal causes. The object of the present subdivision is evidently to see the part played by deaths associated with abortions in making up the total of deaths from puerperal sepsis.

(2) In regard to deaths from haemorrhage it is specified that in case of haemorrhage with abortions the death shall be assigned to the

abortion. The desire is therefore shown to lose no deaths from the totals for abortion, a possible recognition of the growing importance of this cause.

It may be noted that deaths from ascertained criminal abortion, in Canadian practice at least, go to homicide.

(3) Puerperal haemorrhage is recommended for subdivision in the new list into placenta praevia and other haemorrhages.

(4) Puerperal septicaemia and infections not stated as the result of abortion are recommended for subdivision in the new list into:

(a) Puerperal septicaemia and pyaemia.

(b) Puerperal tetanus.

(5) In the revision a new rubric has been created to separate from puerperal albuminuria and eclampsia "Other toxaeemias of pregnancy".

(6) "Phlegmasia alba dolens, embolism or sudden death in puerperium" remains the same after revision, except that the qualification is added for the sudden death "not specified as septic." There is, however, an optional subdivision made, with phlegmasia alba dolens and thrombosis grouped under one sub-heading and embolism or sudden death under the other.

(7) Puerperal diseases of the breast have been eliminated as a separate class and thrown in with the residual class "Other specified diseases or unspecified conditions of the puerperal state."

The brilliant results of the modern treatment of the *toxaeemias of pregnancy*, as placed before us in the work of Professor Victor Harding, Dr. H. B. Van Wyck and their colleagues, are well-known to all physicians and help to convince us that we can and must take better care of the Canadian mother. *Toxaemia, haemorrhage and sepsis* are responsible for at least two-thirds of all maternal deaths. Professor Hendry's valuable paper on "Haemorrhage in the Early Months of Pregnancy,"<sup>5</sup> reminds us of the splendid work of Dr. J. B. Collip, now of McGill, and others on ovarian and placental hormones and impresses us anew with the progress of research in obstetrics and the chance it gives us to reduce maternal mortality. This will help us in our efforts for better classification.

### *Puerperal Sepsis*

From 33 per cent to 40 per cent of all maternal deaths are classified under puerperal sepsis.

Statisticians in countries which use an abbreviated list of causes in publishing death tables, generally report puerperal sepsis separately. The prescribed minimum of classification, the Abridged International List, both as it existed before the revision of 1929 with 38 causes or groups, and after the revision with 43 causes or groups, insisted and insists on the separation of puerperal septicaemia from other puerperal causes.

The conquest of sepsis as the principal cause of maternal mortality cannot be long delayed.

Since 1925, some thirty-two authorities and investigators, including Kinloch of Edinburgh, Watson of New York and Dafoe of Toronto, quoted in 1931 by Smith<sup>6</sup> of Aberdeen, have come to the conclusion that puerperal fever is caused mainly by the *Streptococcus haemolyticus* and that undoubtedly the majority of these deaths are due to this organism. Further, several of these investigators have shown that this organism comes almost certainly from throats, noses, or focal infections of physicians, nurses, or students present during the labour; or (in a few cases only) from the patient herself.

In accordance with this, early and successful treatment by the use of scarlet fever anti-toxin and proper precautions to prevent possible sources of infection have been instituted in certain hospitals in Canada and elsewhere with excellent results. In a personal communication Dr. Dafoe gives the following results in the Burnside Hospital, Toronto General Hospital:—

- "1. Of former methods of treatment, January, 1922—June, 1926, 4½ years—2231 deliveries.  
Number of deaths from puerperal sepsis—12, or 5 per 1,000.
2. Following our changed method of investigation and treatment with routine measures, together with scarlet fever anti-toxin, June, 1926—January, 1930, 3½ years—2467 deliveries.  
Number of deaths from puerperal sepsis—2 (one of which is questionable) or .08 per 1,000."

To reduce the mortality in puerperal sepsis 84 per cent in the short space of three years and six months is a great achievement and one of which the profession in Canada may well be proud.

Dr. J. Smith<sup>6</sup>, Director of the City Hospital Laboratory, Aberdeen, gives the results of important investigations in which the *Streptococcus haemolyticus* alone, or with the *Bacillus coli*, or the *Bacillus coli* alone, was found in 21 cases of puerperal fever and was traced to its source in 18 cases. In five cases that source was the nose or throat or thumb of the doctor; in three cases the source was found both in doctor and in patient; in five cases in the nose or throat of the nurse; in four cases in the patient herself and in one case the nose and throat of a student who was present at the labour. In three cases the source was not determined.

Finally, Dr. Smith recommends measures by which these infections may be prevented in maternity hospitals and wards, including the strict and careful observance of modern antiseptic ritual, with masking of nose and mouth, the individual isolation of maternity patients by glass and metal screens, and the restriction of all examinations and treatments to the small single wards or theatres off the main maternity wards, as well as the routine bacteriological examination of the nose, throat and any focal infection present in the patient, the maternity hospital

staff and students with appropriate action in accordance with these results. He points out that as soon as all doctors and nurses responsible for maternity work realize the situation and act accordingly, we may look for a reduction in maternal deaths. When that time comes, or perhaps before that time comes, we shall be able to improve our classification.

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Statistics and Cancer

"Perhaps our death certificates should be changed to meet the special needs of cancer cases. I am inclined to think so, but with such moves we must proceed cautiously. Our main effort must be directed toward the collection of accurate and dependable data concerning deaths from cancer, and to do this we must ourselves advance with the advancement of medical knowledge and encourage the practising physician, who is the source of these data, to keep pace and to enter into our labours as an intelligent co-partner with full freedom of criticism or suggestion. To accomplish this we must magnify, if possible, the importance of our work. We must never forget nor let the scientific world forget that the field of vital statistics in the study of cancer, as well as of all other disease, is a vital component of medical research. Statisticians and pathologists are likely to develop an inferiority complex. Labouring in the zone of the interior far from the battle line where the spectacular fighting of disease occupies the world's attention, we are tempted by sheer isolation to minimize the basic importance of our endeavours and to fail to plead unceasingly, day in and day out, their significance."—*Problems of Cancer Mortality Statistics*, H. E. Robertson, M.D. *American Journal of Public Health*, v. XX, No. 3.

# Editorials

## THE AMERICAN PUBLIC HEALTH ASSOCIATION 60TH ANNUAL MEETING AT MONTREAL

THE holding of the 60th Annual Meeting of the American Public Health Association in Montreal, September 14th to 17th, is a kindly expression of interest and good-will which is appreciated not only by the public health workers of the Province of Quebec and of the City of Montreal but by all those who are interested in public health in Canada. The 60th Anniversary Meeting brings to mind the fact that the Association was organized in 1872. The first regular meeting was held at Long Branch, New Jersey, on September 12th of that year under the presidency of the late Dr. Stephen Smith.

At the meeting in St. Louis, in 1884, Canada was invited to join and become a constituent member; in 1890, Mexico accepted a similar invitation, and, in 1902, the republic of Cuba also joined in the membership. The American Public Health Association, therefore, is an international association not only in its interest but in its organization. One cannot read the history of the Association without appreciating the great care which has been exercised in preserving this international relationship. Four Canadians have served in the highest office of the Association; namely, the late Dr. Frederick Montizambert, who served as president, 1891; the late Dr. Emanuel P. Lachapelle who preside over the meeting held in Montreal in 1894; the late Dr. Frank Wesbrook who was president in 1904, and the late Dr. Charles J. O. Hastings, who directed the councils of the Association at the meeting held in Chicago, 1918, at the critical time of the pandemic of influenza. Mexico has been similarly honoured by the holding of the annual meetings on two occasions in that country and by the election of Dr. Domingo Orvañanos as president of the Association in 1906.

In the records of the Association will be found the names of all of Canada's prominent public health workers. It is indeed most pleasing that Dr. Peter H. Bryce of Ottawa, Canada, who for more than fifty years has been an honoured member of the Association and who may well be called the dean of our public health workers in Canada, will address the Montreal meeting.

The Association met last in Montreal some thirty-seven years ago. It was a notable meeting. The late Dr. Wyatt Johnston of Montreal called attention to the desirability of having more uniform methods for the conduct of laboratory work with the result that the first volume of "Standard Methods" was published in 1898. In a current editorial, the American Public Health Journal pays a glowing tribute to the work of Dr. Johnston. It is fitting, then, that we should bring to mind some of his contributions to the Association and to the cause of public



health. To him the Association is indebted for the formation of a Committee on Laboratory Work and Methods which resulted in the formation of a Section of Bacteriology and Chemistry, which, as the Laboratory Section, now constitutes one of the most important of the Association. To Dr. Johnston should be given the credit for making immediately practical the serological diagnosis of typhoid fever introduced by Widal. Dr. Johnston showed that the test could be performed with blood dried on paper, thus making it possible for physicians to send samples by mail without the necessity of special equipment. His paper, presented at the Buffalo meeting in 1896, was entitled "The Application of the Serum Diagnosis of Typhoid Fever to the Requirements of the Public Health Laboratories". His early death was a great loss to medical science and to the Association in which he was so deeply interested.

The programme for this meeting is one of the most attractive which the Association has ever prepared.

To our fellow members in the United States, Mexico and Cuba, we extend our heartiest greetings and our most cordial welcome to Montreal.

*R. D. Defries.*

### THE ANNUAL MEETING

**M**ILESTONES have a way of implying progress. With the closing of the twentieth annual meeting of the Association in Regina in June, a chronological milestone in the Association's history was duly recorded and an exceptionally large measure of progress was evidenced. Interest bordering on enthusiasm was the keynote of every session. The attendance numerically, has been greater, on many occasions, when the meetings have been held in the East, but with 56 delegates from outside the Province of Saskatchewan in attendance, and more than 100 from the Province itself, it might be described as the Association's most representative gathering.

Our hosts, the City of Regina, and the Province of Saskatchewan, were indefatigable in their efforts to make our stay a memorable one. Certain natural phenomena of a purely local character being staged at times—opportune and otherwise, one is inclined to wonder if the excessive heat and dust storm were not provided in order that those from the East and the extreme West might not unconsciously receive a demonstration of the ability of the Middle West to rise above mere natural things. Such ability was admirably demonstrated.

Comment on the 1931 meeting would be incomplete without reference to the hospitality and sympathetic interest of His Honour the Lieutenant-Governor and Mrs. Munro and the Honourable Minister of Health for the Province, Dr. F. D. Munroe. To those responsible for the Programme, the local committee on arrangements and the Hotel Saskatchewan, our thanks are due.

*J. T. Phair.*

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## PUBLIC HEALTH ADMINISTRATION

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J. W. McINTOSH, B.A., M.B., D.P.H. AND FRED ADAMS, M.B., D.P.H.

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### *Controlling Smallpox, Diphtheria, Scarlet Fever and Measles in Scarboro' Township*

C. D. FARQUHARSON, M.B.,  
*Medical Officer of Health*

IN looking back over our public health work, one is struck by the change in public opinion that has taken place in the past ten years. Formerly, when an outbreak of disease occurred, people would say "Don't you think the schools should be closed"? Now, they say "Something should be done to stop this epidemic".

This short communication outlines the experience I have had in the Township of Scarboro' in controlling communicable diseases, with the successes and difficulties that have been met.

The population is 18,000, with upwards of 2,000 school children, so that one expects outbreaks of the common infections.

#### SMALLPOX CONTROL

Taking the diseases in historical order of control, one would begin with smallpox. Our experience has been that vaccination is almost perfect protection. There has not been anyone who has been vaccinated successfully at any time in his life who has taken smallpox in this township in ten years. It is also possible to do vaccination without severe infections in the arms. Three years ago I vaccinated 2,000

children using a scratch about one-sixteenth of an inch in length and the only infection was a child who six weeks later had an abscess in the axilla. This may not have been due to the vaccination at all.

In adults even with a very small scratch the arm may become much swollen, and it may be better to use the puncture method for those who are vaccinated for the first time.

The only difficulty found with vaccination has been that cases occurred among those who had been vaccinated *unsuccessfully*. This means that there is no assurance that those whose vaccination does not "take" will not take smallpox.

One would recommend that all children be vaccinated in infancy when the reaction is almost nil.

#### DIPHTHERIA CONTROL

The next disease to come under control has been diphtheria. Our position was that we had to do something as there were children in a dying condition when first seen by a doctor. This was especially true in poorer districts where both parents went to work.

At first we did the "Schick" test on

all children and then gave two doses of toxoid to those who were positive. As we found that nearly all school children were positive, we discarded the test and gave the inoculations to all who were willing. We now give three doses of toxoid.

The dosage usually recommended is  $\frac{1}{2}$ ,  $\frac{1}{2}$  and 1 cc., but, as we usually experienced a definite falling off in the number of children for the third dose, we increased our second dose to 1cc. so that, if the child fails to appear for a third dose, he has had the advantage of a larger second dose. It is our practice, therefore, to give  $\frac{1}{2}$  cc., 1 cc., and 1 cc.

The death rate from diphtheria has been reduced as a total. None of the children who had three inoculations have taken diphtheria and the disease has been almost banished from the schools.

Our difficulty has been with cases among pre-school children, who did not receive the toxoid, and in adults. Several deaths have occurred among pre-school children. Of course, these could be prevented by giving the toxoid to all infants at 6 months of age. This is the essential step now in the control of diphtheria.

Another difficulty was with a few children and adults who gave sharp reactions to toxoid. These can be prevented by doing a Reaction test or Schick test in children in the senior classes and in adults.

A third difficulty experienced was when diphtheria was already present in the school, and efforts were made to isolate carriers by means of swabs. Those giving positive swabs from healthy throats were divided into two

classes by doing virulence tests. In the main this test gave satisfactory results, but it is apparently open to error as on one occasion diphtheria disappeared when the culture from a carrier which had been steadily reported non-virulent was reported virulent and the carrier then isolated.

Our custom has been to give toxoid inoculations in all schools each fall where the trustees wished it done. Fall is the best time as more young children start school after summer holidays and they are thus rendered immune just before the time of the year when the disease is at its worst (winter).

#### SCARLET FEVER CONTROL

We have given inoculations against this disease when there has been an outbreak. The Dick test is done first and the positive children given five inoculations.

The results have been that it has always been possible to bring the outbreak under control promptly. The immunity is often satisfactory as there have been several families where the parent has taken scarlet and the children, protected by inoculation, escaped. In many of the schools, children were found still in attendance although showing a scarlet rash, and yet the contacts were protected by inoculation. Out of about 2,000 children who have had the five inoculations, there have only been two who have taken scarlet fever.

Our difficulties have been first with the test. We have had five children who tested negative and yet contracted the disease when exposed. This means that the test is not 100 per cent efficient.

Five inoculations is a large number to give to children when some have reactions; this results in a falling off in numbers before completion of immunization. In several schools it was possible to re-test children after inoculations, and it was found that immunity had been obtained in about 70 per cent. This is not nearly so satisfactory as is obtained in the case of diphtheria with toxoid.

There have been several children who received the five inoculations and, when tested in a year or two, were positive; these were again given the inoculations and, subsequently, have remained negative over a period of years. Others were negative after the first series and have remained negative over a period of years.

#### MEASLES CONTROL

In regard to measles, we have made no general effort to immunize children, but it has been possible in families to protect the younger ones by giving 5 cc. of the parent's blood (immune

blood) immediately on the first diagnosis of measles in the family. This either protected the child completely or, better, it allowed a very mild attack.

#### CONCLUSIONS

Our conclusions would be that smallpox and diphtheria can be wiped out in one case by vaccination and in the other by three inoculations with toxoid. Doctors and parents should be encouraged to have these immunizations done in the first year of life.

With scarlet fever the results are not so good and yet, in view of the seriousness of the disease with its complications, it would seem worth while to give the inoculations and have the child re-tested after some time, say a year, and, then, if necessary repeat the inoculations. In view of our experience that epidemics of scarlet have been controlled, it would be well to have children given the inoculations on the first appearance of the disease in the district.

REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES IN CANADA\*  
BY PROVINCES—JUNE, 1931

Diseases	P.E.I. †	Nova Scotia	New Brunswick	Quebec	Ontario	Mani- toba	Saskat- chewan	Alberta	British Columbia
Diphtheria....	—	11	6	120	110	36	2	10	14
Scarlet Fever..	—	23	19	239	449	128	37	38	37
Measles.....	—	1	1	1447	770	912	64	21	5
Whooping Cough.....	—	42	—	50	271	22	19	8	64
German Measles....	—	4	—	55	96	†	4	3	5
Mumps.....	—	—	—	56	291	215	7	8	42
Smallpox.....	—	—	—	—	21	—	54	—	—
Cerebrospinal Meningitis..	—	—	—	3	10	—	1	1	1
Anterior Poliomyelitis	—	—	—	—	3	1	—	4	6
Typhoid Fever	—	1	7	48	43	3	—	1	3

\*Data furnished by the Dominion Bureau of Statistics, Ottawa.

†Not reportable.

‡Not available at time of issue.

## Canadian National Exhibition

TORONTO, AUGUST 28TH TO SEPTEMBER 12TH, 1931

This year the Canadian National Exhibition celebrates its 53rd anniversary. In the Province of Ontario Building is located the public health exhibit of the Department of Health which occupies the western half of the main wing. The progress of public health has been reflected yearly in the steadily increasing amount of space devoted to the presentation of health facts by the Provin-

In the Women's Building the Canadian Social Hygiene Council is presenting the subject of a periodic health examination and is distributing literature on various public health subjects. The Victorian Order of Nurses, the Canadian Council on Child and Family Welfare and the Canadian Red Cross Society are also presenting attractive exhibits. The National Council of Women are directing the pre-



ONTARIO GOVERNMENT BUILDING, CANADIAN NATIONAL EXHIBITION

cial Department of Health and by the various voluntary health agencies. The subject of industrial hygiene is being presented this year stressing the results of dust infection in industry. A comprehensive display of public health activities in its division of laboratory services is one of the features of the exhibit. This includes laboratory demonstrations of the examination of milk and water. As in former years, a dental clinic for diagnosis and advice is being conducted. Microphotographs and cultures of causative organisms of certain communicable diseases are also being presented. An exhibit of popular health education material forms a section of very special interest.

sensation of a special two-day health programme in this building. The Hon. Dr. J. A. Robb, Minister of Health, and the Hon. Dr. Murray MacLaren, Minister of Health, Ottawa, will open this programme.

It is appreciated by all public health workers that the Canadian National Exhibition presents an exceptional opportunity for reaching the general public. The roll of visitors at the Department of Health exhibit shows that many medical officers of health, public health nurses and sanitarians have come to the Exhibition from the United States and from distant parts of Canada for the purpose of studying the exhibits as prepared by the official and voluntary health agencies.

## NEWS AND COMMENTS

P. A. T. SNEATH, M.D., D.P.H.

### British Columbia

**T**HE British Columbia Medical Association are making detailed arrangements for another post-graduate tour throughout British Columbia this year. The tour will be commenced on August 29th and the following towns will be visited: Kimberley, Grand Forks, Salmon Arms, Victoria, Nanaimo, New Westminster, Vancouver, Prince Rupert and Prince George.

### Alberta

**A**LBERTA'S first hospital day was held throughout the province on June 19th. It is hoped that the holding of an Annual Hospital Day will increase the interest of the public in hospital maintenance. The Hospital Association of Alberta selected June 19th because in hospital history this date is known as Jeanne Mance Day. More than two hundred years before Florence Nightingale went to the Crimea, in 1642 to be exact, Jeanne Mance came to Montreal with Maisonneuve and his little band of soldiers and colonists to found a hospital in the wilderness. There she began the work which to-day stands as Hotel Dieu of Montreal. It is hoped that this date may be acceptable to other hospitals and that in time it may become a Canadian Hospital Day.

The Council of the College of Physicians and Surgeons has requested the Hospital Service Department of the Canadian Medical Association to consider the question of a more nearly uniform system in designating surgical operations, more especially for statistical purposes, with the object of making a definite recommendation to the different provinces.

### Saskatchewan

**I**N the published report of the Department of Public Health and Vital Statistics of Saskatchewan a

series of charts are presented showing the disposition of hospital costs. The cost per patient per day in all hospitals was \$2.96. Salaries constituted 37 per cent; food and provisions, 22 per cent; medical supplies, 11 per cent; fuel, light and power, 11 per cent; upkeep of buildings, 6 per cent; laundry, 3 per cent; and miscellaneous charges, 10 per cent.

The city of Regina is calling for tenders for a new ten-million gallon reservoir in connection with the plans for a considerably enlarged municipal water supply.

### Manitoba

**C**OMMENCING August first, a new plan for the Provincial organization of the Public Health Nursing Services was instituted. In the past any municipality desiring the services of a nurse could obtain the same by paying approximately one-half of the salary of such nurse; the other half being obtained from the Board of Health levy which is a direct levy against the whole of the province. In the new scheme the province is divided into nursing districts. Each district is composed of approximately three rural municipalities including the towns and villages contained therein. Each nurse will give the major portion of her time to home visitation. Incoming pupils in the schools will be inspected, but less time will be spent in the schools than previously. It is hoped that as time progresses the municipalities will be persuaded to employ their local physicians to carry out medical school inspection. Under the existing economic conditions the establishment of full-time health units is not possible in the rural parts of the province. The work in each nursing area will be assisted by the formation of a local Board of Health. This will be constituted by one member from each of the councils of the municipalities and towns. The Chairman of the Board will be one



of the local health officers. The total cost of this service is being borne by the Department of Health and Public Welfare. Before inaugurating this new scheme a special course of training was arranged for all the members of the nursing service early in July and was conducted for two weeks.

The Department of Health and Public Welfare, as part of their effort to control trachoma, inaugurated a series of eye clinics commencing at Steinbach on June 15th. Arrangements were made for the conduct of the clinics by a public health nurse who visited the families in which cases were found by the survey of last year. The Department was fortunate in having the assistance and advice of Dr. J. D. Pagé, General Medical Officer of the Immigration Service, Ottawa, who was visiting Manitoba at that time.

Trachoma is an urgent economic and public health problem. Dr. Pagé recommended that trachoma clinics or treatment institutions should be established in the area where individuals could obtain a week or more of treatment, during which time the patients might be trained in the methods for the prevention of the spread of the disease to others in the family or community. Dr. Pagé stated that in Missouri, where they have established pensions for the blind, the cost to the State for pensions to persons blind as a result of trachoma is \$365,000 a year.

The Department is holding clinics twice a year in the affected districts, and in the interval between the clinics a nurse will continue her follow-up work, assisting in keeping the patients under treatment. Arrangements have been made for the hospitalization in Winnipeg of certain cases.

One of the outstanding addresses delivered at the Canadian Public Health Association Meeting at Regina was the address of the Honourable Dr. E. W. Montgomery on "Gordon

Bell—Physician and Naturalist", constituting an eloquent tribute to one of Canada's greatest physicians and public health pioneers. Addresses were also given by Dr. F. W. Jackson, Deputy Minister of Health; Dr. F. T. Cadham, Director, Provincial Laboratory; Dr. Daniel Nicholson, Faculty of Medicine, University of Manitoba; Miss A. E. Wells, Public Health Director; Mr. A. P. Paget, Recorder of Vital Statistics and Dr. H. A. Douglas, Medical Officer of Health, Winnipeg.

The Annual Meeting of the Manitoba Medical Association will be held at Brandon, September 8th, 9th and 10th, 1931.

#### Ontario

Dr. C. B. Farrar, Professor of Psychiatry, University of Toronto, and Director of the Psychiatric Hospital, Toronto, has been honoured by being appointed editor of the American Journal of Psychiatry. Dr. Farrar succeeds Dr. Edward N. Brush, one of the outstanding psychiatrists on this continent. Dr. Brush, after many years of service, has resigned in order to devote his time to recording, in medical history, the development of psychiatry.

#### Quebec

Dr. A. Grant Fleming, Professor of Public Health and Preventive Medicine, McGill University and Dr. Eugene Gagnon, Director of the Division of Vital Statistics, Department of Health, City of Montreal, presented papers at the Annual Meeting in Regina.

#### Nova Scotia

In the Annual Report of the Nova Scotia Sanatorium mention is made of the plans for the organization of a new infirmary building which will practically double the number of infirmary beds available, making a total accommodation of 350 beds.

## Books and Reports

D. T. FRASER, B.A., M.B., D.P.H.; R. R. McCLENAHAN, B.A., M.B., D.P.H.

**International Studies on the Relation between the Private and Official Practice of Medicine with Special Reference to the Prevention of Disease—Conducted for The Millbank Memorial Fund by Sir Arthur Newsholme, K.C.B., M.D., F.R.C.P.** London:—George Allan and Unwin Limited; Baltimore:—The Williams and Wilkins Company; 1931. Price \$4.00 (*Vol. I—The Netherlands, Scandinavia, Germany, Austria, Switzerland*); (*Vol. II—Belgium, France, Italy, Jugo-Slavia, Hungary, Poland, Czecho-Slovakia*).

In the progress of civilization certain broad sociological principles have emerged. Some of these mark conspicuously man's slow, painful progress from barbarism. Among those things which have come to be recognized as duties of a modern organized society, are the care of the aged, the infirm and the destitute.

As functions of Government have increased and have become more comprehensive the care of the health of the people or public health, so-called, has come to be recognized as a primary responsibility of the competent authority, Federal, Provincial or Local. Furthermore in many countries; in fact in nearly all, in Europe; social insurance against sickness invalidity, accident, old age, and unemployment, has been introduced.

These developments have given rise to many difficulties, especially in the orientation of the practice of medicine. Completely unfettered at the outset

and with almost no interference from, or relation to, government, medicine has come to find herself the cinderella of the learned professions. The reasons for this are obvious. The care of the sick and afflicted is not only a science and an art, but it is also a humanitarian pursuit. Then again, as advances have taken place in knowledge of the causes of many diseases, and of methods for their prevention, the wisdom of creating special governmental machinery to combat preventable sickness and deaths, has become increasingly evident.

The creation of public health services has proceeded apace. The technical duties of such services have been undertaken by physicians in the whole or part-time service of government. The exact definition or delimitation of the field of preventive medicine in which the organised community should engage and for which it should pay has not yet been established. In consequence the physician engaged in the private practice of medicine has come to be encompassed round about on every side by official medical practice, preventive or social, which to his dismay he finds is constantly and continuously lessening the demand for his services as a private medical practitioner. When there is added to this complexity the difficulties inherent in the application of sickness and invalidity insurance schemes, it is not surprising that unrest and dissatisfaction have arisen in the ranks of the medical profession on the one hand and in some instances among those

for whose benefit these measures have been developed, on the other. In the foreword to these studies appears the following explanatory note "One of the major problems in the present-day public health administration is that of ascertaining the proper sphere of the private physician in the field of public health", and further, "the purpose of the study (made on behalf of the Millbank Memorial Fund) being to throw light on the relationship in different countries between the fields of activity of private practising physicians and of physicians and laymen engaged in public health work". The author himself in his preface, adds: "This volume . . . one of the three similar volumes describing the circumstances of medical work in a number of European countries as related to public administration, local and national, when this concerns itself with direct measures for the prevention or treatment of disease".

Obviously not every branch of medicine could be surveyed, so the author has limited himself, "to sampling these medical activities selecting those which are typical or exceptional and which are specially instructive to the workers engaged in medical administration or in private medical practice, who desire to have the light of experience in other fields thrown on their own problems." The countries which have been visited and studied are listed in the titles of those volumes which have already appeared. Volume three, yet to appear, will deal with England and Wales, Scotland and Ireland. Some of the topics discussed or referred to are:—Hospital and medical organi-

sation, midwifery service, sickness and invalidity insurance, care of tuberculosis and venereal diseases, school medical inspection, puerperal and infant mortality, child welfare work, vaccination, care of maternity, medical associations and syndicates, polyclinics, public assistance, midwives, outlines of government organisation and governmental methods in dealing with invalidity and sickness. Medical education in some countries is also briefly referred to.

The problem which presented itself to the author in the selection of material is made evident to the reader as he peruses volumes one and two of these studies. The miscellaneous character of the material, the emphasis at one time upon detail and at another upon principle is apt to leave those who study these volumes in a state of confusion somewhat greater than may have existed prior to the undertaking.

Much of the material here presented is of necessity abstracted from documents. To the serious student of social insurance, sickness, accident, invalidity, or old age, naturally these volumes will be wholly inadequate substitutes for the original sources obtainable from the International Labour office of the League of Nations. Likewise, the administrator concerned with problems of public health organisation, legislation and administration in other countries will almost certainly have to resort to the Health Organisation of the League of Nations for his material, much of which he will find in the International Health Year-Book or in the studies of Public Health Organisation of many countries

which have been prepared for the Health Section of the League. Then again, the student of medical organisation will hardly be satisfied with the very sketchy treatment of the subject which he will find in these publications. Thus to your reviewer it seems, judging from volumes one and two, that for the expert these studies are of very limited value apart from their worth in indicating the personal views of the author. For the medical practitioner they are at once too detailed and too condensed.

For the general reader interested in questions which are common to nearly all modern states and who wishes to obtain some insight into matters which are the concern of every intelligent citizen these studies should be a valuable introduction.

There is evidence of the inclusion of some statements which certainly appear to be incorrect. For example on page 114, volume one, Norway; it is stated that "the medical officer is the key to the entire medical work in each commune. *He cannot be removed from office and is pensionable.*" If this last sentence is true, it is remarkable, to put it mildly!

The indices in the first two volumes are of very limited value indeed and in books, the selling price of which is four dollars, are a just cause for complaint.

J. G. F.

**Report on the Work of the Conferences of Directors of Schools of Hygiene with a Memorandum on the Teaching of Hygiene in Various European Countries—**  
*Published by the League of Nations, Health Organisation, Geneva, Switzerland, Official No.: C. H. 888, Series III Health, 1930, III. 10. Price 5s., \$1.25.*

This report of 118 pages presents the findings of two conferences, one held in Paris in May, 1930, and one in Dresden in July, 1930, together with a memorandum on the teaching of hygiene in the various European countries, prepared by Professor Carl Prausnitz. In this memorandum a detailed description of the work accomplished in Czechoslovakia, France, Germany, Great Britain, Hungary, Poland and Yugoslavia by the Schools of Hygiene or other institutions is presented. The memorandum contains photographs of a number of the Schools together with floor plan and other illustrations. Included in this description are the State Institute of Hygiene, Prague; the Institute of Hygiene, Nancy; the London School of Hygiene and Tropical Medicine; the State Institute of Hygiene, Warsaw; and the State Institute of Hygiene, Zagreb. This report is of special interest to all who are interested in the training of public health personnel.

R. D. D.

## BOOKS RECEIVED

*Diagnosis and Treatment of Venereal Diseases* by David Lees, Edinburgh, with introduction by Wm. Robertson, Late Medical Officer of Health, Edinburgh. Second Edition. Published by E. & S. Livingstone, 16 and 17 Teviot Place, 1931. Canadian Agents, The Macmillan Company of Canada, St. Martin's House, 70 Bond Street, Toronto.

*Abdominal Pain* by John Morley, Manchester, with an introduction by J. S. B. Stopford, Professor of Anatomy, University of Manchester. Published by E. & S. Livingstone, 16 and 17 Teviot Place, 1931. Canadian Agents, The Macmillan Company of Canada, St. Martin's House, 70 Bond Street, Toronto.

## CURRENT HEALTH LITERATURE

*These brief abstracts are intended to direct attention to some articles in various journals which have been published during the preceding month. The Secretary of the Editorial Board is pleased to mail any of the journals referred to so that the abstracted article may be read in its entirety. No charge is made for this service. Prompt return (within three days) is requested in order that the journals may be available to other readers.*

**Recent Views on Pneumococcosis**—An extensive study of the literature of this subject summarized as follows:

"(1) The isolation of silica from other dusts has been fully justified by later research, which has provided evidence that (i) silicosis may be fairly advanced without seriously impairing general health; (ii) silicosis acts almost specifically in preparing the way for serious pulmonary tuberculosis; (iii) tuberculosis may precipitate latent silicosis; and (iv) a close relation has been found to exist experimentally between the two conditions.

"(2) Other dust can originate generalized pulmonary fibrosis, which may be finer in character and more injurious to the functions of the lungs than is silicosis, but lacks any special association with tuberculosis.

"(3) Each dust calls for special study, but those of certain silicates appear to be of great importance. Asbestos is the most characteristically injurious, but others, such as basalt, set up a condition which differs in degree rather than in type.

"(4) The dust of pure coal seems to be innocuous; but many samples of coal contain sufficient minerals to set up pulmonary fibrosis. And this fibrosis causes the coal particles to be so detained in the lungs as to impair their capacity mechanically.

"(5) On the other hand, pure calcium dusts, such as marble and limestone, as met with in industry, have no injurious effect. Moreover, they dissolve in the body fluids and so do not accumulate as may coal."

Collins, E. L., *Proc. Roy. Soc. Med.* v. XXIV, No. 5 (Mar.), pp. 531-542.

**The Etiology of Disseminated Sclerosis**—Dr. W. L. Holman personally investigated the claims of Miss Kathleen Chevassut in regard to the discovery of a "virus" as the causative agent in disseminated sclerosis. The last paragraph indicates his conclusions in regard to this work:

"I am convinced that the claims for a specific virus in this disease should be given no credence, the use of vaccines should be condemned, and some effort should be made to counteract the effect of the wide publicity given this unreliable and improperly controlled investigation."

Holman, W. L., *Canad. M. A. J.*, v. XXIV, No. 6 (June), pp. 850-853.

**An Epidemiological Study of Typhoid Fever in Six Ohio River Cities**—A very detailed study of typhoid fever in 1927 and 1928 in six cities drawing a water supply from the Ohio River. The study failed to reveal any evidence, either direct or presumptive, which in any way implicates the public water supply as a vehicle for the transmission of the disease. Ample evidence was obtained

to indicate that other modes of transmission were in all probability the route of contact. A triumph in water purification; the communication itself a model for others to follow.

Veldee, M. V., *Pub. Health Rep.*, v. 46, No. 25 (June 19), pp. 1460-1488.

**Ataxia of Cerebellar Type Following Diphtheria**—The authors record mental retardation and lack of co-ordination following an attack of diphtheria at 4 years of age. The onset of this condition was in 1919 and the present condition of the girl, now 15 years old, still shows severe incoordination and mental retardation. Previous to diphtheria the child had had occasional epileptiform attacks and these are attributed to possible congenital aneurysms on cerebral or cerebellar arteries; that one such aneurysm may have ruptured during the course of the diphtheria causing an extensive lesion of the cerebellum and deeper parts of the brain may be an explanation of the change during the course of the diphtheria. Another possible explanation is extensive thrombosis in the cerebellar arteries.

Worster-Drought, C. and Hill, T. R., *Proc. Roy. Soc. Med.*, v. XXIV, No. 5 (Mar.), pp. 567-568.

**Carotinemia Resulting from Restricted Diet**—The author reports the observations on two cases of pigmentation occurring in women who had been on restricted diets, one in order to reduce her weight and the other to treat acne vulgaris on her face. The diet had been mainly vegetables, including carrots, and oranges. The skin of the face, neck and feet presented an abnormal light yellow

colour. The sclerae and mucus membranes were normal; the van de Bergh reaction was negative. Extract of the urine with petroleum benzin appeared yellowish. The pigmentation was readily increased by increasing the carrots in the diet. The discoloration and pigmentation rapidly faded by correcting the diet and eliminating the carotene-bearing foods. Something to consider in the differential diagnosis of jaundice.

Levin, O. L. and Silvers, S. H., *J. A. M. A.*, v. 96, No. 26 (June 27), pp. 2190-2193.

**Physical Findings in School Boys**—This article, based on the work in the secondary schools in New York, will be of particular interest to those who recognize the necessity for the health supervision in secondary schools. This group, 14-17 years, has been heretofore largely neglected in the health scheme and is in reality a fruitful ground for the application of modern principles and practice of preventive medicine and health education. A most timely contribution.

Meyers, J., *Am. J. Pub. Health*, v. XXI, No. 6 (June), pp. 615-632.

### **Mortality from Puerperal Septicemia in the United States**

Dr. Harmon analyses the mortality statistics in the United States, 1922-27. His analysis shows that, for the period studied, with the possible exception of the rural white population, no decrease in death rates from puerperal septicemia has been found in any of the divisions of the population considered, and furthermore that the rates of each division remained remarkably constant.

Harmon, G. E., *Am. J. Pub. Health*, v. XXI, No. 6 (June), pp. 633-636.



